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THE ESSENTIAL OF THE ART OF MEDICINE.

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The closing years of the eighteenth century and the early years of the nineteenth century marked an epoch in medicine as transcendent for its welfare as the events of the past decade bespeak for the glory of the medicine of the future. In that epoch was witnessed the passing of the old; the dawn of the new. A long farewell was being said to schools of medicine and systems of pathology and false methods; a timorous but cordial welcome was extended to the beginnings of that which culminated in the realism of the nineteenth century. It is true, as echoes of the past, Brunonianism, Broussaisism, the Stimolo and Contrastimolo of Rasori, and subordinate "isms" furnished exercise for the expiring idealistic intellect, and seemed to condone for the pernicious therapeutics of the early periods of this century.

Although the reform period extended over the seventeenth and eighteenth centuries, the death agony of idealism began about the period we have indicated. It is true that Harvey and Willis and Glisson, and Malpighi, and Schwammerdam, in the seventeenth century supplemented the labors of the early anatomists and bid fair to found a science of medicine. In this earlier century, most important of all, arose the Baconian system of philosophy. Nevertheless the sway of the imagination and the rule of theory never seemed more powerful. Deductive philosophy seemed to be at its height. Instruments of precision had not been employed up to this time, and the collateral sciences were not sufficiently developed to invoke aid from them in the investigations of physiology and pathology. It is not to be wondered at that the indefinite data secured by observation restricted to the unaided eye, and to the touch, should lead them to indulge in elaborate classifications of disease and to refinements in symptomatology which now serve only to amuse and appal. Under these circumstances the Iatro-chemical, the Iatro mechanical, the Mechanico-dynamic schools, the schools of Animism and Vitalism and Solidism waxed and waned, and out of them the Brunonian, Rasorian, Hahnemannian and other fallacious schools were born.

Along with pseudo-scientific systems, artificial classification reached its highest pitch in that of Sauvage. His system included ten classes of disease, each subdivided into several orders, and some as many as 295 genera and 2400 species of disease (Park). For Cullen, four classes with 149 genera were enough to encompass the field of pathology.

Time forbids entering into detail concerning the theoretic and speculative modes of treatment which grew out of such specious pathology. Again there was a rise and fall. To Willis again (seventeenth century) credit must first be given for approaching the rational and scientific in therapeutics (Leech), as in physiology and anatomy. Sydenham displayed the most astute scientific habit of mind in urging simple observation and simple treatment, in fully recognizing the healing power of nature, and in removing the immediate cause of the disease. Observation and experience was the central idea of his method, a revival of Hippocratic methods, which to this day influence medical thought. It is interesting to know on the authority of Leech that, with the exception of emetics, purgatives, bitters and carminatives, very few of the drugs he and Willis employed had the powers they claimed for them, and most of them have lapsed into a deserved oblivion. Both these great men were moderate polypharmacists, as many as eighteen herbs only being used in one prescription. Their rivals and successors, however, far surpassed them in the number and character of the ingredients of the formulæ they employed. With the growth and decay of systems in the eighteenth century—the death agony lapsing into the nineteenth—flourished and declined, remedial measures debilitating or stimulating, alterative or evacuant, according to the specific view in vogue. Venesection followed shortly and lingered long; stimulation raged, polypharmacy grew apace and then, when results did not warrant practice, change in the type of disease was invoked (Allison and others) to fit fact to theory.

Theoretic systems came to an end with the promulgation of the systems of Brown, Broussais and Hahnemann. A universal skepticism arose; the expectant treatment in France, and in Germany "Nihilismus," were the refuge of scientific inquirers (Benett). Therapeutics, with the development of chemistry and the growth of physiology and pathology, became rational. But, further reference, with your permission, will be made to rational therapeutics later.

In the meantime it must not be forgotten that Stahl and his followers were among the earliest skeptics, denying the efficiency of medicine, even doubting the value of opium and cinchona. Let it be recorded here likewise, as an admonition to those who oppose and a hope for those who favor, that as early as 280 B. C., perhaps by others earlier, Erasistratus urged gymnastics, exercise, diet and baths, in preference to drugs, and that the echoes of his refrain never died out. Asclepiades discarded all violent remedies and relied on hygienic means alone. Moreover, from time immemorial climatic treatment was extolled. Coming to later days, among the not a few essays on climatic treatment, Rush's description of the advantages secured by long journeys on horseback for the treatment of consumption is as fascinating as the many writings of this almost myriad-minded man.

It is quite impossible to leave the deductive philosophers, the theorists, the speculators in the medicine of the eighteenth century, without an inquiry into the methods employed by them to secure data upon which the diagnosis of disease was based and therapeutics determined. "What a patient said and what the physician saw and felt was all a case of disease had to tell him," Mitchell eloquently states. Such was the limitation of the inquiry. Instruments of precision were not used, chemic analysis not made, while biologic studies were not dreamed of. It is true Paulus Ægineta had employed sounds and specula; Santorini counted the pulse and used the thermometer and balance; Boerhaave used the thermometer in the axilla, and the lens; Floyer and Haller marked seconds with the watch. Their use was forgotten or neglected. This is not to be wondered at when we recall the obtuse state of mental receptivity that allowed Avenbrugger, who invented percussion and described it so pithily and exhaustively in 1760, to wait until 1808 for Corvisart's recognition of its value.

Examination of a patient included, careful scrutiny of the exterior, the face and features, the eye, the protruded tongue, the state of the extremities in comparison with the trunk, the color of the skin; observation of the temperature and degree of moisture or dryness of the skin and the varying pulse revealed to the touch; a note of the decubitus, the movements of muscles and of the naked-eye characteristics of the urine, the vomitus and the feces. Changes the character of the voice, and delirium, stupor and other gross evidences of impaired cerebral action were described. The eye saw more than it sees today, mayhap, but it looked through the glass darkly; the touch was more sensitive, but not as sensible. Generally it was "observation gone minutely mad." (Mitchell.) Fifteen minutes would have been ample time to make a complete objective examination of the patient, unless the refinements of symptomatology, conjured by the imagination, furnished opportunity for the lapse of longer time. The accuracy of the diagnosis depended more upon the extent of the experience of the physician and his knowledge of medicine acquired by reading than upon precision in the method of obtaining facts upon which to base a diagnosis. Such diagnosis was often an intuition, as harmful then as now, and hence attained without it being possible to state the process of reasoning by which the end was secured. Think of it, that the number of the pulse and the respiration is rarely referred to in the writings of Rush and Cullen, and that Corvisart "On the Heart," says nothing of the frequency of the pulse, and Laënnec makes no mention of the breathing rate. In truth, actual diagnoses were not made, but instead, a symptom, such as jaundice, dropsy or fever was described. It is not to be wondered at, as previously indicated, to appease the patient and establish his own authority, theories of disease were uppermost in the physician's mind, and deductions from such theories utilized to establish diagnoses and formulate lines of treatment. Cullen stated that theory could not be separated from practice, hence it was unimportant which came first, and that, therefore theories could control observations.

If guessing the truth from ill-defined data is an intuition, and so-called "rule of thumb" methods an inspiration, it can then be said that the medicine of this period reached the acme of perfection of such methods of diagnoses; from this time its displacement by inductive methods began.

But medicine as a science was no higher nor lower than cognate departments of knowledge. Law, it is true, was a science then as in the days of Justinian. Theology was not removed from the deductive methods of reasoning, although there was reaction and quickening. Metaphysics, because dealing with the unknowable, was deductive, but physics and astronomy were casting off their swaddling clothes. The former had just run the gauntlet of deductive philosophy, after the brilliant deduction of Black, whereby the theory of latent heat was established, one of the very few deductions which afterward was proved directly and inductively to be true. Chemistry was a new-born in the sciences under the brilliant accouchement of Lavoisier; geology had grown through the labors of Buffon and Rouelle, but it was only welcomed to the circle of the sciences by the genius of Cuvier. Botany, groaning with the classification of Linnæus, was emerging into light by virtue of the brilliant generalizations of Goethe in vegetal physiology (the awakening of evolution) and of Desfontaines and Jussieu in structural physiology. Berzelius and Lisle were organizing mineralogy. Cuvier was associating anatomy with geology and laying the foundations of paleontology. The brilliant dictum of this great man that the "first question in science is always a question of method" resulted in sweeping away the artificial classifications in natural history as of Linnæus in botany, and in removing natural sciences from the hands of the observer into that of the experimenter. Buckle's remark, "the consequences of which has been the attainment of that precision and accuracy of detail which experiment alone can give and which is every way superior to such popular facts as observation supplies," none the less applies to natural history, then and now, than to a minor department of it, the science of medicine. Cuvier, he further remarks taught naturalists the true path of inquiry by accustoming them to a close and severe method, and by teaching them to despise vague descriptions. How well we should take this to heart in our present day labors—close and severe method.

The latter half of the eighteenth century also shows the industrial arts flourishing to a high degree, but carried on alone by "rule of thumb" methods and by experience. Brewing, cheese-making, milling, butter-making, tanning, metallurgy and other industrial arts were conducted without scientific method, and the art transmitted from father to son, from master to apprentice after years of trial and oft, from repeated failures, of tribulation. In spinning and weaving, in iron-making and other manufactures, great machines, instruments of precision in industrial arts, were bringing about changes which were destined to modify the social fabric of the world.

In fine it may be said, science ceased to be deductive, and was fast growing to be inductive and experimental. Medicine too was becoming inductive and realistic; its art scientific and rational.

For more than nine and ninety months the gestation of modern medicine was in progress during this century. Morgagni was laying the foundation of morbid anatomy, (1761) the "great" Haller had brought light out of darkness in establishing experimental science and laying the foundation of modern physiology, but to Hunter in the eighteenth, and Pinel and Bichat in the late eighteenth and early nineteenth century, we owe our foundations of medicine. Hunter could not put aside the deductive methods of reasoning entirely, but in pathology he employed both induc-

tive and deductive methods alike, as Buckle points out, attaining the truth more nearly with the former method. Certain it is that to Hunter we owe the development of *method* in pathological inquiry, observation and experiment being the handmaidens with which he gathered the innumerable data which make him the "equal of Aristotle, Harvey and Bichat and the superior of Haller and Cuvier." To Pinel we owe the substitution of analytic for synthetic methods and the origin of systematic diagnosis by the careful construction of symptoms, while to Bichat, the "Napoleon of Medicine," to whom is due the foundations of modern morphology, we as clinicians owe "the establishment of that large and sweeping innovation which opens up a new view of thought and creates fresh resources." He of all others overthrew speculative tendencies in medicine.

The progress during the present century, familiar to all, has been marked by the employment of inductive methods of reasoning in the departments of physiology, pathology and clinical medicine. By the results of such methods and the development of a scientific habit of thought, the science of medicine, which is that of physiology in its broadest sense, the physiology of health as well as the physiology of disease, including the effects of drugs, can well fill its minor place in the science of biology. The old cry of the uncertainty of medicine, the unscientific character of the art of medicine, can not be held up to us. No Montaigne can at this day hurl the shafts of ridicule and satire that stung to the quick and stimulated honest doubt in the sixteenth century. Well do we know, ourselves, our limitations as well as our power, and with becoming modesty do we uphold the claims of medicine as a science. If science is "knowledge gained by systematic observation, experiment and reasoning; knowledge, co-ordinated, arranged and systematized," well fortified is he with cynicism who has the hardihood to maintain the contrary.

To sketch the struggles by which this firm height has been attained would be to reiterate that which is familiar to you and to detain you far beyond the measure of your desserts. Its history would be the story of the labors of Bailie, Laënnec, Cruveilhier, Rokitansky, and others in forming the foundations of morbid anatomy, and of Virchow, Cohnheim, Koch, Lister, Pasteur and hosts of others in both continents, creating the science of morbid physiology. Its history would be an account of the application of scientific habits of thought in experiment, observation and analysis. It would show the dependence of it upon the major sciences, if they may be so termed, chemistry, physics and biology, whereby instruments of precision and methods of chemical, physical and biological research became essential in the practice of the art of medicine, in diagnosis and in therapeutics. It would show that we have attained precise knowledge of the origin, course, mode of recognition and control of many diseases; that we can predict the occurrence of their daily phenomena, as the astronomer predicts the appearance and course of a comet. From our knowledge of etiology we can create disease at will, but more triumphant of all achievements, the glory of the century, we can deliberately and positively, and hence scientifically, prevent disease. We have learned that diseases are events exhibiting disturbances of the processes of physiology; that involution, degeneration, decay and death are normal events, as are evolution, growth and birth. The great postulates of Koch, the brilliant steps in inductive biology of Pasteur and of Lister leading to preventive measures, the scope of which is almost inconceivable, is akin to the conceptions of Newton and Dalton in physics.

Such advances were only attained by the master spirit of the naturalist. We are wont to forget that the use of instruments of precision, guided by the method and scientific habit of thought of the naturalist as physician brought us to this great height. Our debt to the naturalist must never be forgotten. The lesson we can the better learn from a closer analysis of the position of modern diagnosis and modern therapeutics in modern thought. It would be unjust however not to give credit to that scientific honest doubt and scientific receptivity of truth which is characteristic of the Anglo-Saxon intellect, by reason of which the philosophical structures of this era have been raised.

It must be remembered that the closing years of the nineteeth century are marked by the prevalence in all fields of mental activity of that habit of thought which has grown out of inductive philosophy. In whatsoever domain we make investigation we find that which may be called a scientific habit of thought prevails. In theology it has extended to such a degree as to alarm, without just grounds for such alarm, those who have the hardihood to cling to old habits attendant upon the deductive science. Here it now appears almost iconoclastic. It need not, on the one hand, be the occasion for fear; nor on the other, for the creation of antagonism. For experience has shown that the exposition of truth in this manner only the more firmly builds the temple which it is thought might be destroyed; while from many standpoints we know the utter futility of attempting to prevent the progress of knowledge thus attained. In history inductive philosophy has revolutionized methods, and wrought out a philosophy which harmonizes human action with organic law. In sociology, although as yet tentative, it is aiding in the solution of problems which will contribute to human happiness. Chemistry has verily grown to an exact science, and the exposition of the "Periodic Law" looks to greater exactitude in the science of pharmacology.

The conservation and correlation of forces in physics and the conception of evolution in biology are the triumphs of inductive philosophy and the glory of this great era.

Diagnosis.—The department of clinical medicine is an art as well as a science and includes diagnosis and therapeutics. I have elsewhere stated the limitations of the inquiry in diagnosis one hundred years ago. Then one-fourth, one-sixteenth of the time now employed sufficed to gather all data. It is not necessary to rehearse to you the expansion of the inquiry at this day. To establish any diagnosis perhaps days may be required. After securing subjective data, there are required the skill of the chemist to analyze secretions; of the physiologist to examine the blood and apply the physical instruments of precision so necessary to elucidate the facts derived from the visual apparatus, the nervous system, the circulation and he respiration; of the biologist, to study the life properties of the parasite that may be the ruthless invader of tissues. By these means, however, and by the use of auscultation and percussion; by the use of modern methods of direct vision with specula and lens and mirrors; or of indirect vision, with photograph

and Roentgen rays, or more precisely still by bringing the inaccessible to view by exploratory operation or exploratory puncture, precision in diagnosis has reached a degree over which exultation can only be calmed by awe at the possibilities of further expansion. It is seen that anesthetics and asepsis brought to us a timely aid in diagnosis—exploratory operation. To be more explicit and more emphatic, the accompanying table will more strongly display the scope and position of modern diagnosis.

DISEASES RECOGNIZED BY SCIENTIFIC METHODS—INSTRUMENTS OF PRECISION.

1. Malaria.
2. Leprosy.
3. Relapsing fever.
4. Dysentery (amebic, providing the ameba is recognized as the cause of disease).
5. Tuberculosis—bacteria and tuberculin.
6. Diphtheria.
7. Asiatic cholera.
8. Tetanus.
9. Actinomycosis.
10. Glanders—serum test Malein.
11. Cancer } in cerain localities.
12. Sarcoma }
13. Leukemia.
14. Various parasites, as filaria.

DIAGNOSIS RECOGNIZED BY SCIENTIFIC METHODS, WITH LIMITATIONS.

1. Typhoid fever (*may be certain*).
2. Various forms of pyogenic infection if in blood.
3. Various forms of meningitis from lumbar puncture.
4. Chlorosis.
5. Pernicious anemia.
6. Gonorrhea.
7. Effusions by exploratory incision.
8. Growths by exploratory operation.
9. Eye diseases.
10. Laryngeal diseases.
11. Ear diseases.

It is thus seen that whereas in 1800 only a few diseases could be positively recognized, now as many as fourteen in internal medicine alone can positively and beyond peradventure be diagnosticated, while eleven more with limitations that the scientific mind can appreciate can be affirmed to exist. What more forcible statement can be made to show the position of the science of diagnosis. Still more enforced however, when we remember that in addition the list can be swollen tenfold, if we would include the groups of the diseases of special organs, as eye, ear, etc., and those of internal organs which can be recognized by a scientific consideration of an orderly procession of the facts. These are those first, of etiology brought out in the social history; second, of the history and course of previous diseases, and third, of the evolution of the disease under consideration, united to, fourth, the data derived by an objective examination of the patient when in addition diagnosis by exclusion is judiciously employed—a close and severe method in gathering data. Under the above circumstances, scurvy, myxedema, exophthalmic goiter, hemophilia, the inflammations or degenerations of most organs and many other affections are not be overlooked.

What a difference in comparison with the diagnoses of bygone days. In a given case of suspected malaria, five minutes examination of the blood settles the diagnosis and wipes out the necessity of all considerations of the manifold subjective symptoms of the disease, and the objective symptoms which often were questionable facts from imaginary postulates. A conception of diagnosis or the breadth of research necessary to establish such diagnosis shows that time is gained to the patient, lost to the physician. It is not any wonder, therefore, that a general practitioner must have a corps of trained assistants or laboratories at his command. While the patient has gained in the precision and rapidity of a diagnosis, the gain of a community is much greater. The instant recognition of an epidemic forewarns and forearms. Instead of waiting for a large group of cases, and a series of autopsies, the biological diagnosis of one case settles all doubt.

It is thus seen that an essential in the art of diagnosis is skill in the use of instruments of precision and the application of a scientific habit of thought. It is further seen that with the incoming of scientific precision there is the outgoing of so-called art. Diagnosis by intuition, by careless "rule of thumb," methods, by an appeal to an experience which is incoordinated, unsystematized and unarranged, is as little trustworthy as the shifting sands of the Sahara.

Diagnosis has thus become in many directions scientific, precise and positive. It has minimized the value of experience and eliminated deductive reasoning as a factor in the art of medicine, which in consequence has grown more practical because more scientific, and less theoretic because more practical. In diagnosis the art of attaining the end has been replaced by the scientific method of securing this end—the large element of uncertainty based upon imperfectly gathered and unreliable data, replaced by the small element of possible error of method in securing positive data.

THERAPEUTICS.

Venesection, polypharmacy, treatment based on deductive generalizations, swayed medical practice a hundred years ago. The beginning transition to rational therapeutics has been outlined, and it is important to note that such change was the result of the projection of scientific habits of thought into the field of the therapeutist, and the appreciation by him of the facts and principles of biology. The first rude awakening took place when the therapeutist was asked to define what he was treating, to place on a scientific basis the knowledge of the nature of the disease against which he was exercising his power. He had to state with definiteness and precision, as far attainable as possible, the nature of the processes contending over the treatment of which the theorists gave birth to a jargon of medical literature as vast in its extent as in its indefiniteness, and by which the mental vision of the artisan was obscured. It was rational for him, in order to answer this question properly, to study the natural history of disease; to learn from the study of a large number of cases the origin, the progress, and the decline of diseases, and their effects upon the economy when death resulted. The promulgation of studies of this character was made more readily possible by the establishment of hospitals and dispensaries in the seventeenth and eighteenth centuries, by means of which the aggregations could be classified and compared. The practitioner, in the on-rush of duty, could not retain from month to month the recollection of a type of disease, for such comparison. The multiplicity of the cases, and the enlarged extent of the experience, the presentation in the ward perhaps of a dozen cases of a given type at one time, coupled with the habit of recording the history of cases, made the conduct of such studies possible. Out of this inquiry arose the Paris Pathological

School and the Vienna School of Medicine. Alth gh none the more forceful, the labors of the former seem to dominate the medical thought of the first half of the century. The numerical method of Louis contributed vastly to our knowledge of the course of disease and the effects of remedies. The methods that he supported to such an extreme as to lead to their own injury, resulted in the production of essays in the natural history of the specific ailment, indicating that disease had an evolution and involution which, if undisturbed, tended to a natural cure. Thus, the self-limitation of many ailments was worked out. The essays of Bennett and Wilks and Gull and of Bigelow and Flint awakened a judicious skepticism. The application of the analytic methods of various forms of treatment brought about the same result. Expectancy became the rule of the hour. That disease was an expression of morbid physiology, the natural tendency of which was to self-restoration, became evident to all.

The accumulation of knowledge, and its array in mathematic language, led to the interjection of other sciences—that of mathematic philosophy, as involved in the theory of probabilities and of the science of statistics. Cold, formal mathematics gave little ground for theory to stand upon.

The analytic study of a large number of prescriptions by Martindale, and later by Patch, carried out for another purpose, disclosed the fact that, after all, a great deal of our boasted therapeusis as to the number of drugs employed, was brag and bluster. A study of Martindale's analyses shows that the total number of times the drugs, which were called for more than thirty times, were used was 31,664 in 12,000 prescriptions; but 8,588 of these were employed externally or as excipients. Thirteen drugs alone in various preparations were prescribed 10,054 times, nearly one-half of the entire number, excluding externals.

Of course, the great array of agents employed, the fact that many perished with the setting of the sun that had arisen on the day of their birth, was called attention to by many observers, and led to further doubt. Then skepticism came about in another way. The more incurable the disease the greater the number of drugs vaunted for its relief. Hence, upward of 90 were advised at one time for epilepsy; hosts for exophthalmic goiter and for other affections, uncontrollable in days gone by. In scanning the literature of the "drug-house" one can too often set down as worthless the drug that "cures" many diseases, or one can fix in his mind as incurable the disease that has a multitude of remedies recommended for its cure. The pretentious and formidable array of drugs that the manufacturers thrust at us daily is alike as uncomplimentary to our knowledge and common sense as it is an evidence of the infantile state of their therapeutics. I counted 554 Galenical drugs alone in a price-list, not having the time to calculate upon inorganic and other preparations. Such drug-firms cater surely to that period of the evolution of a doctor wittily epitomized by Radcliffe: "When young, he had 20 remedies for every disease; when old, 20 diseases for which he had no remedy." And thus it has come about that the individual judgment of the effects of treatment of individual cases, unless hedged in by limitations, is of very little value unless supported by laboratory experiments.

Calm, deliberative study on the lines established by the schools referred to, whereby the physiology and the patholgy of the disease were acquired, as well as knowledge of its course in new environments, led to the production of many essays on the limitations and the powers of drugs. Moreover, such studies led us to know the nature of the disease, the action of the drug in health and its action in disease. It seems most absurd that such processes of ratiocination did not occur long before the advent of physiologic therapeutics.

Then occurred to many, as they went along in practice, how small the number of drugs actually employed. Repeated papers have been published upon subjects that went to show how few drugs were actually employed, and how small the number upon which reliance could be placed. Moreover, drug-accounts and the requisition-blanks of hospitals and army and navy dispensatories showed what few drugs were actual necessities. A critical analysis of a modern work on therapeutics reveals the fact that the certainties are few. The number of drugs that are scientifically curative can be counted on the fingers of the two hands.

The criteria upon which to base statements of the value of drugs are those of experiment and observation. The number from which by experiment and reason we know produce a definite effect are limited, types of which are seen in opium, belladonna and alkalies.

Another group of observers, basing their criticism upon very patent scientific grounds, led us to understand that we could not judge of the action of a drug if it was administered in conjunction with other remedies. Hence, assaults on polypharmacy began. The most reasonable injunction that simplicity in therapeutics is essential prevails largely at the present time, but that the assaults must continue the following prescription, devised on the twenty-eighth day of May, in the year of our Lord 1898, by a writer of some prominence in therapeutics, witnesses—the drugs only are enumerated: sodium salicylate, potassium acetate, ammonium acetate, fluid extract of euphorbia, peppermint water, compound tincture of benzoin, compound tincture of capsicum, tincture of nux vomica, syrup of tolu. (I trust the recording angel will wipe out the sin of theft from a prescription-file). Here is another for an infant 9 months old, with nostrums from three other bottles, and the wonder was the child died. It contained quinin sulphate, protonuclein, pepsin, hydrochloric acid, arsenic chlorid, and one or two excipients.

The therapeutist may continue to smile blandly as he will, and continue to dogmatize. But when I am told that fluid extract of bugleweed controls pulmonary hemorrhage, I ask what is pulmonary hemorrhage, its physiology and pathology, and, with such knowledge, how far is its artificial control possible; secondly, whether pulmonary hemorrhage does not stop of its own accord; thirdly, whether rest, diet, etc., and above all, removal of the cause is not quite sufficient; and finally, whether "mental expectancy," or "confidence," does not bring about the imperturbability that secondarily brings rest? When these questions are answered, then it is time to decide upon the virtue of the remedy proposed. Unless we have a measure of such knowledge, and experimental knowledge of the powers of the drug, a scientific conscience will not allow us to use drugs in this manner.

It has then come to this, that the value of a system of therapeutics, or of a single remedy, can only be determined when, 1, the natural history of the disease is known; 2, the influence of other factors promotive

of the natural course of the disease, as rest, diet, etc., are eliminated; 3, when the so-called personal equation of the observer is set at naught; 4, when that peculiar influence of mind on body, the hypnotic effect of extraneous conditions, the results of mental expectancy, are eliminated. That the second, third and fourth liabilities to error can scarcely be controlled is almost self-evident. Hence, for the foundation of rational or scientific therapeutics, experiment must form a basis for conclusions. Such experiment, to be of value, must imply a knowledge of the disease or the essential in the disease to be combated. Until the discovery of toxins, we had no knowledge of the entity we are called upon to counteract in diphtheria. The therapeusis of this affection, prior to the discovery of the antitoxin, was promulgated from an appalling array of data subject to extraordinary liability to error because of the possibilities already indicated and because of the limitation of our knowledge. The vast labor attendant upon the collection of data from which to draw conclusions can hardly be appreciated, but the labor is not wasted. It is true the indications for management secured are subordinated to the one principle; they are none the less valuable. Through them we learned that certain lines of diet, fresh air and sunshine, limitation of the catarrhal process, and other indications were contributive to restoration to health. Our negative information was most valuable; above all, we learned what not to do. The amount of energy expended in such therapeutic warfare, commendatory for its profusion is startling, and were it not that an atom of good always results, one would wish its course could be turned into the lines of more precisely scientific inquiry.

At too wearisome a length have I trespassed upon your time and patience. A review of the rise of therapeutics to the dignity of science shows throughout, whether in combating the old or in bringing forth the new, the naturalist, the scientist in spirit if not in fact, is the controlling force. The physician as naturalist dissipated speculative therapy; by his habit of thought and mode of action he curbed excesses, destroyed fallacies, and erected new structures. Study the downfall of any system of therapeusis, and it will be seen the naturalist made the first incursion against its folly. Study the establishment of any truth and it will be seen that the scientist laid its foundations. As in diagnosis, so in therapeusis, all advancement, all gain has been made at the hands of the scientist.

Scientific doubt first prevailed; scientific action followed. So the art of therapeusis is being replaced by the science. To establish a diagnosis, therefore, and to conduct a judicious and productive therapeusis two things are required, the scientific habit of mind and a scientific method of inquiry, the essential in the art of medicine. The steps required in the elaboration of a diagnosis have been detailed. It has been seen that patient, elaborate, precise inquiry is necessary in diagnosis, involving the expenditure of considerable time and the use of instruments of precision to attain accuracy. The same spirit must prevail in the application of remedies. The carping critic may well say some diseases are cured by remedies the action of which can not be scientifically examined. True, some therapeutics is accidental, as the discovery of the utility of sodium salicylate in the treatment of rheumatism, but that does not lessen the necessity for all to be scientific.

The enthusiastic therapeutist may say your reasons will lead to nihilism. It is not necessary to be nihilistic, and indeed I am far from it. I thoroughly believe in the action of drugs. I am sure that an effect is produced, however small, by the introduction of various substances into the system. It is not that protest is raised against the non-action of drugs, but more truly doubt of the necessity for securing action is put forth, as its possibilities for good or evil can not be estimated. It is not a question whether the drugs act or do not act; it is a question of the necessity to secure such action. Save in the control of certain symptoms, for which, as pain, we have a capable armamentarium, it is not necessary to invoke remedies except those directed to the removal or counteraction of a definite cause. If the cause is not established scientifically the remedy can not be applied scientifically. But the over zealous will urge, if no drugs are administered, we lose the one great power of therapeutics—the effect of mental impression and the good results of mental expectancy. Quite true, but does the necessity of this lie exist any more in medicine than, as Zola points out, in religion?

Can not a method more practical, less harmful, or even with less possibilities of harm, be employed? The desired end is to secure faith and confidence. What can be more productive of both these than the careful, patient, systematic and analytic examination of a patient? What more surely establishes confidence than the feeling of the patient that the physician knows his ailment; that he knows how long to let it go unaided, and when to interfere with its course? Confidence, thus begot, eliminates the necessity of administering many or often any drugs, and when with the patient inquiry there is conjoined an imperturbability of spirit of the physician that he can only attain from self-confidence, secured by knowledge precisely acquired, what an amount of solace and comfort is given! Witness for yourself the therapeutic effect of one half-hour's examination of a patient. Hence it is that I plead for a scientific habit of mind in medicine. Is it not proved again that essential to the art of medicine is the science of medicine?

But do not think if we are limited in the number of drugs that cure, we have not unlimited means to restore health. The achievement of the century is that we recognize disease, not as an affection of one organ alone but as a process in which all are perturbed or involved; that, in consequence thereof, we strive to restore that perversion of the physiology of the entire economy. Hence, principles of treatment are invoked, which includes remedies and means to stimulate or repress or replace secretions or excretions, to similarily influence excess of physiologic action, to allay pain and quiet perturbed nerves. Systems of rest or of exercise, the use of water internally and externally, of heat and cold, of judicious venesection, of dietetic methods, the effect of climate, are our potent therapeutic agents.

The ultimate aim of the art of medicine is to cure the patient. It is assumed as a business, not as a calling, as was beautifully expressed in days of old. It may occur to the fledgling in medicine that he is "called upon" to engage in the professional labor, but it will soon come to him, sometimes rudely, that he is engaged in a business. It is true he has nothing to trade with; he has skill for the service of humanity. But for such service he expects remuneration. He

should have ideals of duty, but they are not different from those that any business man should hold. We may talk, we should talk, we must talk about ethics, but so should every man of business. The sooner, therefore, we remove ourselves from the pedestal we would fain usurp, and put ourselves among men, to be controlled by the ethics of all men, the better for us. Just so soon will we come into the possibility of controlling those of our brothers who do assume this practical attitude. Time was when we vied for supremacy with the judge, the minister and the schoolteacher. Now the banker, the engineer, the man of science, the scientific manufacturer and organizer, in every sphere rivals us in standing in the community. That higher ethical principles and a nobler conception of duty, a firmer grasp of truth, a more inspiring stimulus to action, a sure effacement of self and selfishness can accrue from the cultivation of science, need not be maintained. Huxley and hosts of others have eloquently pleaded on these lines, far beyond the feeble powers that are given me to uphold them. We can not hide ourselves behind that self-satisfaction which attributes to ourselves qualities and virtues a little above those of the ordinary man. We must do character building on a platform similar to that applied to ordinary men. Let us arm men with truth, surround them with truth, and give them the means of seeing truth. It has been shown that there is no necessity for the therapeutic lie, that it is unscientific, as well as inconsistent. Truth only can be cultivated. The constant use of speechless, yet speaking, instruments of precision that deal only in truth, begets truth. Truth to ourselves, to our patients, truth to our fellows, truth to our profession, will silently, even unknown to ourselves, grow if scientific habits of thought are cultivated.

Assuming, then, that in the practice of our art we are engaged in establishing a business—a fact, if not acknowledged, is always tacitly assumed—it can be said as a matter of business, that the scientific habit of thought must be cultivated. It is "business" to secure the confidence of your patient, for it is a step toward getting him well. If secured by the honest method of an honest study of his ailment it is divorced entirely from quacking. The "lie," not existing, is not paid for. It is "business" to establish truth between ourselves and our patients. Brains are necessary, but character is essential. People are far more willing to pay for character than for brains; they are far more willing to pay for honesty than for specious dogma.

The close of the nineteeth century witnesses the application to a high degree of the facts of science to the daily avocations of life. In whatsoever department of human activity we make investigation we find the application of scientific methods employed in the course of the industry. Reference has been made to the rise and progress of industry in the dawn of the nineteenth century. The close is fast approaching a consummation. In the great iron and metal industries, from mining to the conversion of the metal into its final mold, the man of science presides over its destinies. Every mine has its geologist; every furnace and every foundry its chemist; in tanning, in refining, in the making of sugar, of paints, of varnish, of oils, in dyeing, in the manufacture of cotton and woolen goods, scientific experts are employed constantly. There is no trusting to luck. Large hat-factories have chemists to pronounce upon the felt used; in the manufacture of food-products, the knowledge of the biologist is commanded; brewing, cheese-making, and the manufacture of all dairy products can be scientifically controlled. Hansen grows and furnishes yeasts of various kinds for the many varieties of beers. Kahn has changed butter-making from an art to a science. It is needless to further multiply illustrations. Look around you; in every mill and in every factory is seen this change from an art to a science—art, so-called, is declining, science is extending.

The nineteenth century cormorant, wealth, and its coadjuvant competition, have thus pushed science to the fore. The large amounts of money invested in business operations make it necessary to preclude all elements of chance.

Just as some connoisseurs aver, and others deny, that the beer of the day is not quite like the beer of the good old days of hand-brewing, so we are forced to admit that the science of medicine is not what yet may be expected of it. Science has much yet to learn from art. The change is in progress; it is irresistible; it will accrue to the benefit of mankind.

We have thus seen how, on parallel lines, art, *i. e.*, chance methods, is being replaced by science, and by the same analogies that the value of the science of medicine above the art of medicine can be appreciated. Where we have but little knowledge, the more so-called art is essential, the less precision is noticeable in our work; hence the greater the opportunities for the display of quackery; the less of the knowable, the more of charlatanism.

The history of all science and the history of medicine point to the absolute necessity for its development and growth, and its practical application to the welfare of man, that he who prosecutes it must possess a scientific habit of analysis and comparison, to put aside that which is false, recognize that which is true, or withhold judgment, as did Newton, who, when asked why he walked, replied with courage of power, "he did not know." With the conviction that essential to the art of medicine are those qualities of heart and head that belong to him who possesses a scientific habit of mind and cultivate sscience in the true spirit, come new responsibilities, new hopes, new fears, new rewards, new inspirations.

Our first responsibility will be to our successors. Those of us who are teachers must change our methods. Formerly, the apprentice acquired from the master an art that required the limited training of only one or two senses. After acquiring the secrets of the art as his master divulged it, lectures were attended to hear the problems (theoretic) discussed. Now, senses must be trained—a mind developed that possesses only a scientific habit; years are required. The early labors of the college must be supplemented by labor in the medical school. Two years should be devoted to the study of anatomy, including histology and embryology, to physiology, including as much biology as possible, to medical chemistry and to pathology. We owe it to our profession and to our students. We have added a year to our medical curriculum and robbed the college course of its valued year. We must replace it by honest training. The laboratory and the hospital-ward are to be the student's theater of action. Didactic lectures are to be the exception rather than the rule. In this manner, and in this manner only, can the student be fitted for his life-duties. Our further duty is toward the noble charities placed under our guidance. We cry against hospital abuse and dis-

pensary injustice. Need we not look to ourselves? Do we conduct our labors in such institutions in accordance with modern scientific methods whereby we contribute to knowledge and human health? Pardon a passing thought. All such institutions should be under the guidance of a State board, similar to the State Board in Pennsylvania controlling lunatic asylums. Undoubtedly abuse creeps in on the side of the management as well as the physicians. Then, if dispensaries are conducted on scientific methods there would be room for every man who deserved a position in a dispensary—certainly in the dispensaries of Philadelphia. Time will not permit further extension of this thought. The fact is, our methods must be reformed in our dispensary as well as in our hospital work. It is unjust alike to science and to the public to see as many as twenty-five patients per hour in dispensary practice.

Our fear is the possibility that we may become practical in the sense that the politician has grown practical. In this stage of our evolution such fears can be awakened. The ophthalmologist is our most scientific man; we know the dangers that surround him, but we see him emerge unscathed from the ordeal. Moreover, the environment of the physician is such as to preclude the possibility of the development of any but the higher and nobler traits of character.

The truths of medical science and their practical application are cosmopolitan. Law is limited by political barrier; religion by race and by mental development. The promulgation of truths in medicine, or the establishment of a method of its art, affects for good the entire universe, and not only men but all animal creation. The labors of Mitchell on snake poisoning, in Philadelphia, touch the welfare of the entire population of India. The result of Lister's researches are as valuable in China as in England. The words of Koch are as powerful in Japan as in Berlin. What greater reward is it than to be an humble fellow worker in a field so broad, and what higher inspiration than the stimulus attending such labors.

Our hope is that with such necessity for scientific labor will come the greater development of truth and character. Cant and hypocrisy, quackery and deceit, can not thrive in such an atmosphere, and as the years of toil are added one to the other, character grows broad, firm, clear. Constant association with instruments of precision that can not lie, incites truth. With the attainment of scientific habits, what more glorious rewards can come than that which accrues from the noble purpose, the lofty aim, the chivalrous spirit of the man of science.

Let us then, be not impatient. The adamantine position secured by the labors of Lister and Koch and Pasteur; the advanced state of preventive medicine at this day; the scientific method of the treatment of disease, as seen in that of diphtheria; the vistas that are opening with the advent of organ-therapy shows the rise of a new science of medicine. Unfortunate only are we, that to witness the dawn only, is our privilege. Of what the high noontide of medicine will show we can but hear the whisperings.

Sal Ammoniac in Tropical Dysentery has been found effective by Attygalle (Ceylon), administered every four hours, combined in some cases with small amounts of opium and cannabis Indica. The blood disappeared from the discharges and the colics ceased by the third or fourth day in nearly every case.—*Semaine Méd.*, May 11.

ORIGINAL ARTICLES.

SOME DISORDERS OF DIGESTION OF FREQUENT OCCURRENCE.

Read before the Medical Society of Erie County.

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Probably there is no complaint more frequently encountered in practice than disordered digestion. It is seen at all seasons, at all ages, and in all ranks of life. This paper will attempt to describe in outline the class of cases we see almost daily, and which are frequently spoken of as "functional disorders of digestion." By this is meant an abnormal condition of function unaccompanied by any pronounced anatomic change in structure, so far as we know. This limits the scope of the paper, as it excludes all those forms of disordered digestion resulting from organic disease of the alimetary tract, or any other part of the body, also the very acute forms, often called cholera morbus, and the indigestion of very young children. The rarer forms manifested by various reflex symptoms will not be considered.

The simplest method of describing the class of cases treated in this paper is to relate the average history and symptoms given by a patient applying for relief: The patient usually begins with the statement, "my stomach must be out of order," or "I am sick at my stomach all the time," or "everything I eat seems to sour on my stomach." Sometimes there is a complaint of epigastric pain. This is about all the patient volunteers as to the nature, or description of the disorder, but questioning at once elicits other significant symptons. There is apt to be an eructation of gas with or without a bitter sour taste after the ingestion of food, accompanied by epigastric distress relieved by the belching of gas. The above phenomena are often attended with precordial pain and oppression extending across the left chest and a variable distance down the left arm, shortness of breath, worse on exertion; in other words, the group of symptoms described as palpitation of the heart. Sometimes there is a slight feeling of uneasiness in the head, but never amounting to headache, also a feeling of languor, though not pronounced. The tongue is inclined to be coated presenting rather a brownish appearance, with the accompanying disagreeable taste. Vomiting is rare in the cases under consideration, though nausea is met with in a few cases. Usually the bowels are undisturbed; diarrhea does not occur in this form of digestive disturbance.

There is another class of cases more common than the one just mentioned, and the variety, in my experience, is the more frequent. These patients always begin their complaint with, "I am all used up," or "I am good for nothing and don't know what the matter can be," or again "I must be bilious," or "My liver must be out of order," and most frequently is the assertion made "I must have malaria from the way I feel." Complaint is made of the desire to sleep most of the time and inability to attend to customary duties without great mental effort. Further questioning brings out the statement that the languid feeling is always present and that sleep brings no sense of refreshment, the patient often feeling worse after sleeping. There is very apt to be a change in the disposition, the individual becoming irritable and trivial affairs cause much worry. There is often an

inability to fix the mind on anything for more than a few seconds consecutively, and even the reading of the daily paper becomes an effort. The one prevailing desire is to be let entirely alone in every respect, and could the inclination be followed, the patient would be content to remain sitting quietly gazing into space and the mind thinking of as near nothing as possible.

When local symptoms are sought, usually there is found a sense of fullness in the abdomen, most pronounced three or four hours after a meal, and sometimes a sense of gas in the intestines, which may be audible. In a few cases there is a feeling of weight or uneasiness in the right hypochondrium, and even tenderness will be found. The tongue is usually clean, though in a few cases there will be a complaint of disturbed taste, and with this is often seen a brownish coating. The bowels have a tendency to be lax, moving two or three times a day, with the passage of more gas than is usual. The movements often smell so fetid that the attention of the patient is drawn to this fact. In a few cases of long standing, or that are especially marked, there is an abundant precipitation of the amorphous urates in the urine. This symptom is often the first to lead the patient to seek medical advice. The appetite remains unchanged usually and there seems to be no sort of food that the patient notices that aggravates the symptoms. The temperature is normal, the pulse usually accelerated a few beats and with less tension than in health. A few cases show a brownish hue of skin, which is different from a jaundiced skin. Palpitation of the heart is quite common in these cases. Sometimes diarrhea is the only symptom complained of by the patient.

The line between these two forms of digestive disorder is by no means very sharply drawn, one often merging into the other, and two often co-exist.

In seeking the cause in any case we usually find that one of the following is the active factor: Deficient teeth; rapid eating; improper food; use of tea, especially strong tea; eating between meals; eating when fatigued; too severe exercise after eating; use of alcohol, especially if concentrated, and most marked if taken just before or after a meal. Frequently two or more of these factors will be found to contribute to the production of the disorder. I have not enumerated them in their order of frequency, or their importance. Such a course is an impossibility.

To fully understand and appreciate the changes occurring in these cases a brief résumé of the process of normal physiologic digestion, and tracing the changes from the normal when the above mentioned causes operate, the production of the symptoms, both subjective and objective, will assist in understanding how such symptoms are produced, and the indications for the proper treatment become apparent and readily met. The first step in the digestive process is the mastication of food, the moistening and mixture with saliva and the oral mucus. This step requires the presence of proper teeth, the molars, both in the upper and lower jaw, and grinding one on the other. Simultaneously the food becomes mixed with and moistened by the saliva and oral mucus, and further moistened by the pharyngeal mucus in the act of deglutition. The saliva has slight amylolytic properties, but it is not likely that the brief sojourn of the carbohydrates in the mouth is sufficient to permit any transformation of importance, and if such a change did occur it would be promptly stopped by the acid of the gastric juice. Doubtless the chief function of the saliva is to moisten the food, rendering deglutition easy, and after thorough mastication the moisture more readily penetrates the substance of whatever may have been submitted to the action of the teeth. Even the softer forms of food, as bread, mashed potatoes, etc., are submitted to the same process, or should be in healthy digestion.

So far the digestive process has been merely preparatory for the important chemic process to begin in the stomach. The gastric secretion we may consider to be composed of hydrochloric acid, pepsin and rennin, of which the acid seems to be the important ingredient, at least from the standpoint of this paper. The action of the gastric juice is mainly proteolytic. Any other action may be disregarded. The proteids are transformed into peptones after passing through two or three preliminary stages. In undergoing this change they apparently swell up and gradually liquefy. The muscular movements of the stomach play an important part, inasmuch as they serve to mix the gastric contents thoroughly by a churning process, and eventually to force them into the duodenum for further digestion.

The peptones are by no means absorbed from the stomach, nor in fact are liquids absorbed to the extent formerly believed. It would seem that the stomach digestion is only an additional preparatory step in the digestive process. There is reason to believe that if the stomach fails to do its share of the transforming process properly, either from any inherent fault or some preceding failure of the digestive tract, viz., the proper mastication, that products incompletely prepared pass into the intestine, thus putting extra work on the intestinal part of digestion, and thus apt to embarrass the latter in the performance of its allotted function. The ingested food, partly transformed, now reaches the duodenum, where it is mingled with the secretion of the pancreas and liver, and the great chemic process of digestion is in the last stage.

As for the pancreatic secretion and the bile, and the part they play in the digestive or chemic process, suffice it to say that the secretion of the pancreas has a decided effect on the proteids, starches and fats. It is on the two latter that it seems to act principally, converting the carbohydrates into dextrose, which is absorbed by the circulation; the fats are emulsified and the proteids dissolved. The solution of the proteids is accomplished in a manner different from in the stomach. The proteids in the intestine disappear by a process of erosion instead of liquefaction.

After these chemic changes most of the converted food is absorbed by the circulation and the lacteals, the grosser and indigestible portion passing into the colon and after absorption of the moisture, forms the body of the feces. The digestive cycle is now completed, and the various structures engaged are entitled to a rest until the following ingestion of food.

The entire alimentary tract, from the lips to the anus, is the home of various forms of bacteria, including those causing putrefaction and fermentation. The ingested food, even if previously sterile, gathers a supply in the mouth, gains more in the stomach, and then meets a larger army in the small intestine.

That the bacteria of putrefaction do not always have full sway and increase seems perhaps remarkable, and they would were it not for a certain inhibitory influence. In the mouth the food remains too short a time to permit their growth. In the stomach

the presence of the hydrochloric acid acts as a restraint. In the small intestine it is known that the contents have an acid reaction, due to the presence of acetic acid, which probably is the result of certain bacteria developing normally in the carbohydrates with the production of this acid, which serves the purpose of restraining the action of the putrefactive bacteria on the intestinal proteids. In the colon it is the province of certain bacteria to develop and form the resulting products, but these need not attract our attention just now.

Briefly then this is the condition found in normal digestion, and it is evident that each portion of the digestive tract must do its share of the work or some one or more portions are apt to be overworked. As a result the overworked portions are apt to be unable to perform their function properly, and soon there is further impairment of the digestive function.

How such an impairment is produced and just how the above mentioned causes of digestive disturbances play their part or parts, will now be traced in detail.

Deficient teeth and rapid eating both act in the same manner. The lack of teeth does not permit the food to be properly divided and mixed with the saliva while in the mouth, consequently the mass reaches the stomach in an imperfectly prepared condition, sometimes insufficiently moistened. The stomach then has to do a portion of the work belonging to the mouth, and work it is unfitted to perform. It can not divide the food properly, and in the place of finely divided and moistened masses that can be readily acted on by the gastric juice, it has to work on the larger masses which can not be thoroughly permeated by the gastric secretion. The proteid portions of the food can not be liquefied readily and have to pass into the intestine in a preliminary stage to the peptone. The food not being thoroughly permeated by the gastric juice and containing bacteria derived from the mouth, is in a favorable condition to undergo decomposition, and this is exactly what does occur, and the resulting production of gas, fatty acids and various organic compounds of the ptomain type. The epigastric distress, the eructations of gas, the feeling of nausea naturally result from such a condition.

Improper food acts in a similar manner, and by improper food is meant not only quality but quantity. Too much food of a bulky and insoluble kind, even if properly prepared in the mouth, can not be properly cared for in the stomach and goes through the same or similar process of decomposition as just described. Among the improper foods may be considered a great excess of any one variety, such as too much bread, too much milk; commonly, nuts, dried vegetables, heavy pastry, cooked shell-fish are the varieties that are apt to cause trouble. Strong tea, from the tannin contained, interferes directly with the chemic process of digestion. The proteids fail to be transformed in the presence of tannin, and peptones already formed are precipitated in an insoluble form. There is one class of patients that owe all their trouble to the tea habit—sewing women. They commonly use very strong tea as a stimulant and keep a pot of the liquid on the stove, resorting to the drink frequently. This class of patients state that all the desire for food they have is for tea and toast, and they show by their appearance that such is the case.

The habit of eating between meals is a cause of difficult digestion, inasmuch as the stomach in place of having a period of rest is compelled to perform its function all the time, consequently it, like every other organ of the body when overworked, fails to perform its duty properly. The food taken between the regular meals, and after a time the proper meals, undergo the decomposition before described.

Eating when fatigued and exercise too soon after eating cause disordered digestion in a somewhat different manner at first, and later in the same way as the causes enumerated. When the body is fatigued from any exertion, either physical or mental, the entire system is in the same condition and the digestive system is unable to do its work from lack of strength. Exercise too soon after eating produces trouble from the fact that the energy or force required by the process of digestion is diverted to another purpose, leaving insufficient to take proper care of the food. There is a great deal of truth in the old saying, "Too tired to eat." When the system is fatigued the food fails to digest and undergoes the same chemic changes found in other conditions.

So far the changes occurring in abnormal gastric digestion have alone been mentioned. The most important changes occur in the small intestine when the improperly prepared food passes into it from the stomach. The intestine not only has its ordinary duty to perform, but is compelled to what was left unfinished by the preceding part of the digestive tract. Fortunately nature is very indulgent and will tolerate this sort of thing for a considerable time, but finally the intestine becomes unable to attend to the increased demand and even fails to perform its natural work properly. In the intestine is found all three classes of food, proteids, carbohydrates, fats. The proteids have not been properly cared for in the stomach and now demand work from the intestine, which it gives but at the expense of allowing the two other classes to suffer. The proteids may already be filled with bacteria and gather more in their new domicile. The carbohydrates are improperly cared for and their normal decomposition with the production of acetic acid, which we have seen prevents the proteids decomposing, becomes abnormal and perverted, and other products are formed. The proteids decompose from lack of proper inhibitory influence, with the resulting formation of abnormal products, many of which are powerful systemic poisons, and various gases. The fats likewise fail to be properly cared for and in place of their undergoing normal emulsification they are decomposed into fatty acids, the various sorts of gases and poisonous products. The intestine has become an active poison factory instead of digesting the food normally, and produces gas in sufficient quantities to cause pain from distension, and the imperfectly digested food is a foreign body to the intestine and is hurried along to the colon and discharged in unnatural stools, in which the undigested food can often be recognized.

The poisonous compounds formed are of the greatest interest to us, as they are to blame for all the constitutional symptoms encountered in cases of imperfect digestion. Their chemistry is complex and just beginning to be understood. They are described in a general way as toxins. These are absorbed and produce a condition of sepsis in most instances, as indicated by the soft and increased rapidity of the pulse. Some cause elevation of the temperature as well and various disturbances of the entire system can be attributed to their presence in the blood. There are some of these poisons that can be detected in the

excretions, chief of which are indol, indican, leucin, tyrosin, etc. Besides, the potassium and ammonium salts are freed and absorbed, producing their effects. These poisonous products produce the languor which is nothing more than a septic condition in these cases. The gas produces the distension, which is increased by the splitting up of the fatty acids, and is often expelled from the stomach or remains in the bowels manifesting its presence by distension and pain, and frequent rumbling, and finally escapes per rectum. This same pressure causes palpitation of the heart in many cases, though this latter symptom is the direct result of irritation of the vagus by the abnormal food products in the stomach. The carbohydrates also form their share of gas and acids. The undigested food irritates the intestine, often causing diarrhea with or without sharp colicky pains.

COURSE OF TREATMENT.

I do not wish it to be understood that the two forms of digestive trouble are all that we meet with in practice, for such is not the case, but they are by far the most common. Furthermore, it is not at all a simple matter to draw the line clearly between the two, for the one having prominent gastric symptoms soon runs into the other type. Often patients are seen with the typic symptoms of both forms. If left untreated and the same habits are continued by the patient, the complaint may be prolonged indefinitely, but this is not of frequent occurrence. The human digestive system will stand an enormous amount of abuse for a long time, and then will do its work kindly, if given a chance. I do not recall a single case that had apparently undergone any permanent anatomic change, and none that could not be relieved if the active factors, as previously enumerated, could be removed and the directions followed. Such a result is possible in every case, and I know of no complaint that gives such a gratifying result when properly treated.

The treatment is mostly dietetic; medicine is only an aid for a short time, to endeavor to overcome the faulty digestion then existing. The first and most important step is to remove the cause, or the causes, as two or more may exist. Lack of teeth, especially the molars, can be removed by artificial teeth, and modern dentistry has given us bridge work which is free from the objections belonging to plates, and is many times more serviceable, especially in the lower jaw. All patients with dyspeptic troubles are better without tea, and its use should be stopped. Rapid eating is not readily stopped, but with patience the sufferer succeeds. Eating when fatigued can be avoided, and rest in the recumbent position for ten or fifteen minutes before a meal is sufficient. No exercise should be taken for at least an hour after eating. This does not prohibit the usual walk to and from business, but means anything like hard work, long walks, riding a wheel, or even severe mental exertion. Exact directions are required for each case and differ in each case.

Improper food is more difficult to describe. I can only state that by improper food is meant that variety that is apt to readily ferment or to decompose in a healthy digestion, and is all the more likely to do so in the cases under consideration. Improper food may be divided into two classes for our purpose. The first class consists of those articles containing a large amount of cellulose, such as the coarser vegetables, skins of fruit, etc. Also those containing an excess of fat, or prepared with the aid of fat, such as all fried food, made dishes, gravies, and in a general way those articles of food that merely gratify the palate without having any decided nutritive value. Sweets of all sorts are especially bad from the starchy matter contained, and especially from the pernicious habit of taking them between the meals. Oatmeal or other cereals as commonly eaten, the first thing in the morning, are especially injurious, not *per se*, but from the sugar used to render them more palatable. Sweets of any sort taken the first thing at a meal, or a short time before a meal, will effectually destroy the appetite. It is just as reasonable to begin the morning meal with a cereal flavored with sugar and cream as it would be to begin the midday meal with cornstarch with sugar and cream. It is quite probable that the starchy or sweet foods taken in this manner undergo rapid fermentation in the stomach owing to the insufficient secretion of gastric juice, and the resulting exercise of the inhibitory influence of the hydrochloric acid on the bacteria fermentation. At any rate it is a matter of common experience that cereals taken after meal do not cause the same disturbance. I frequently find patients who say, "all I care for at breakfast is a dish of oatmeal and a cup of coffee." Yet these same patients find that if the oatmeal is taken as a dessert, that is, after eating other food, there is a good appetite for other varieties of food and enjoyment left for the cereal without any of the subsequent discomfort. This serves to illustrate how a proper food may become an improper one, owing to the time of a meal it is taken.

Observation for some time has led me to notice there is one class of our population that is especially apt to suffer from digestive disorders, the farming class. This opinion has been frequently corroborated by men accustomed to see more of this class than I. I have inquired about the digestion of this class for a number of years and find that the majority of their minor ailments are digestive disorders. The cause of this is not the occupation but the food, which I think may be called decidedly improper. It is customary to find the three daily meals in many farmhouses to consist of salt or fresh pork, usually fried, fried potatoes, strong tea, sweets in the form of canned or preserved fruits or honey, and usually a liberal supply of pancakes with the ever present supply of maple syrup. Rapid eating is also the custom, and many of the older people lack the teeth necessary for proper mastication. Add to this fact that as soon as the meal is finished work is at once commenced, while the horses are having the necessary rest, and is it any wonder that digestion should be impaired? The fact that all do not suffer shows how much abuse our digestive system will tolerate before rebelling. I do not intend to cast any slur on the farmers as a class, but make use of a description of the custom of many of them to describe how improper food plays such an important factor in producing imperfect digestion.

There are two other classes of people that suffer from two factors at least in causing their trouble, improper food and eating between meals. One class consists mainly of students, principally girls, who are very fond of eating after study hours are over for the day, and that is usually late in the afternoon, at a time when the stomach and intestine can not get rid of the ingested food before the next meal when it is called upon to perform its function without any rest. The

food taken by these patients is decidedly improper consisting usually of pastry of some sort seasoned with preserves and followed by candy, or the latter is often taken on the way home as an appetizer for the coming repast. The lunch soon becomes the regular meal and a forced attempt to take food at the proper hour fails, or results in the production of trouble which increases as long as these habits are continued. Is it any wonder that the appetite grows poor, that flesh and strength is lost, and the parents become worried? Nearly two years ago I read before this society a paper on the subject of anemia in women occuring at an age of 10 to 20 years. At that time I spoke of the affect improper food and carelessness in eating had in producing an anemic condition. Further experience only more fully strengthens my belief that many anemic cases are due to this habit almost entirely. The other class referred to are molders. These men usually have a lunch about 10 A.M., with it a liberal allowance of beer and at the mid-day meal there is no appetite and more beer is taken to sustain the strength, another lunch in the middle of the afternoon with beer, and the evening meal is taken with the same enjoyment as the noon meal. Any proper amount of food taken at the regular meals usually causes distress. These two classes evidently keep their digestive system at work all the time except during sleep, and probably many of them do at that time; that it fails to do its work under such conditions is not surprising.

The effect of concentrated alcohol on digestion is too well known to require any description beyond the fact that it interferes chemically with gastric digestion; besides it affects the liver seriously in its work.

The description of these various classes of cases may assist in showing how the several factors contribute to cause trouble, and bearing them in mind the indication for the dietetic management of any case becomes evident. Briefly, this indication may be stated to be a correction of the patient's bad habits in eating, the direction as to the proper sort of food, the proper time for eating, etc.

Medicinal treatment is only secondary to the dietetic management, and without the former our treatment by drugs is practically useless. Many patients are benefited by taking a glass of water a short time before meals, especially on rising in the morning. This seems to have a good effect in causing the stomach to contract and expell any mucus or remains of a former meal, and so be better prepared to care for the food soon to come. Whether the water be hot or cold seems immaterial, and as cold water can always be obtained, I usually direct that the cold be taken.

Hydrochloric acid in the dilute form is of great value in cases with gastric symptoms, either alone in doses of 10 to 20 drops, or combined with two or three drops of liquor arsenii chloridi of the pharmacopeia. The purpose of the dilute acid is merely to prevent any decomposition of the food in the stomach, which I think it does, as naturally it is this same acid that exercises an inhibitory influence on the bacteria. The arsenic seems to assist in this action. I have not used any pepsin preparation for some time in connection with the acid, as it seemed superflous, the acid being given for a definite purpose. If fermentation or decomposition of food continues, or is excessive, the salicylates are useful in addition to the acid. The use of the various so-called vegetable digestives has always seemed to me an illogical practice, and I have never noticed any benefit from their use. Calomel in minute doses once or twice daily is useful, principally for the stimulating effect on the liver. The use of alkalies for the arrest of the gas and the resulting distention is decidedly an improper thing as a routine measure. It will neutralize the formation of fatty acids with their eructation by forming a chemic combination with these acids, and at the same time it forms a combination with the hydrochloric acid and thus aggravated the symptom for which it was given. An alkali before meals has a different effect, though I have never found any benefit from such use. I have seen a number of cases that were aggravated by the continual use of alkalies to relieve the acidity of the stomach. It is a far more rational proceeding to prevent the formation of gas than it is to allow it to form and then administer a remedy that alleviates apparently the trouble but all the time is aggravating it. The use of the muriatic acid, with or without the arsenic or salicylates, will do far more for this condition than all the alkalies a patient can swallow while digestion is going on in the stomach.

When the symptoms are mostly of intestinal origin, a different method is apt to give better results. It is necessary that the stomach do its proper share of the work, and by the time the intestine begins to fail in its work the patient has begun to allow the stomach to have a chance to do its work, by taking less food, either from a diminished appetite, or from noting there is less epigastric distress following the ingestion of the smaller quantity. Before any success can be secured in the faulty digestion of the intestine it is essential that the preceding portion of the alimentary tract be in proper working order. Fortunately this is the case generally, as just stated; if not, the proper directions as to diet, medicine, etc., must be given.

Calomel in small doses once or twice daily is of decided value; it increases the hepatic secretion, perhaps the pancreatic, but it is doubtful if it can have any antiseptic effect in doses of one-twentieth to to one-tenth grain. Dilute nitric or nitro-muriatic acid in 15 drop doses are very useful, they act through their effect on the liver, probably like calomel. Phosphate of soda sometimes acts well given in teaspoonful doses three times daily at first; later only before breakfast. The pancreatic extract proves valuable, especially in those cases accompanied by much gas in the intestine, given in doses of 3 to 6 grains an hour after meals. Inspissated ox-gall can be given with it if desired. The palpitation of the heart is often an annoying symptom and due to gas in the gut pressing on the heart. A ready and sure method of alleviating it is with nitroglycerin one-hundredth grain every half hour until relieved, one dose is usually sufficient and produces comfort in ten minutes. Diarrhea, if present, is to be treated as the digestive disorder and not by itself with laxatives or astringents. In cases weakened by the continued malnutrition, alcohol is often given with the result of an improvement in the general welfare. The best form is a dry wine well diluted with a carbonated water, or whisky and brandy well diluted. Sweet wines and malt liquors always produce more gas and the resulting discomfort. The above plan of treatment is the one I have employed for some years and invariably gives good results, but after all it should be remembered that it is only my personal experience and is open to discussion.

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CEREBRO-SPINAL MENINGITIS, WITH REPORT OF CASES.

BY J. F. SHELLEY, M.D.
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The disease has been demonstrated bacteriologically to appear in epidemic and sporadic form. In sporadic cases it is difficult and frequently impossible, if severe and rapidly fatal, to differentiate this form of meningitis from that secondary to other infectious diseases, except by lumbar puncture, and therefore it is as yet impossible to say how extensively the disease exists in sporadic form.

In 1880 Eberth supposed he had found in the micrococcus lanceolatus the essential cause of the disease, and since then until about 1895 it was generally accepted as the specific cause, the demonstration of a distinct micro-organism in 1887 by Weichselbaum, which he called the "diplococcus intracellularis meningitidis" notwithstanding. It seems that the organism found by Weichselbaum was supposed to be the lanceolatus (Flexner and Barker, *Am. J. Med. Sciences*, Vol. 107, p. 159), and it was not until Jaeger, Heubner and Finkelstein about nine years later took up the matter and confirmed the demonstrations of Weichselbaum that the meningococcus of Weichselbaum received general recognition. These investigators clearly differentiated between the two organisms both microscopically and by inoculation experiment. They found the lanceolatus far more virulent than the intracellularis.

Recently the epidemic in Boston through the researches of W. T. Councilman, Mallory and Wright (*Amr. Jour. Med. Sciences*, March, 1898), has thrown much light on the etiology of the disease, and has given us a clear definition of all the aspects of the micrococcus both in the organism and in culture. They made lumbar puncture in fifty-five cases and demonstrated the diplococci in thirty-eight of them. They think the negative results in the balance of the cases were not always because they were not present, and some of the punctures were made presumably after they had disappeared from the fluid.

In general he confirmed the results of Weichselbaum and Jaeger, but he thinks the capsule referred to by Jaeger as occasionally met with is simply a swollen condition in which the organism would not take the stain, except a small portion of the center. Councilman also confirms the statement of Weichselbaum that the diplococcus is decolorized by the Gram method, while Jaeger said coverslips could be stained with the Gram method. There seems to be some difficulty to differentiate between gonococci and the diplococcus intracellularis, but the latter vary more than the former in size and the meningococci are said to grow well on glycerin-agar.

The mode of entry and the avenue are still matters of very uncertain speculation. The nose, the ear and the intestinal canal all have been supposed by various observers to be the infection atrium. Strümpell believed there was a relation between coryza and epidemic meningitis, and if this be true, with the fact that Sternberg found the micrococcus lanceolatus in the saliva of 50 per cent. of healthy individuals, it was not hard to believe so long as this organism was supposed to be the cause of the disease, that the nares served a very probable way of infection. That the real microbe of the disease is not so constantly found in these parts does not, however, bar the possibility of thus infecting the meninges. Weigert made note of purulent inflammations of the nasal sinuses accompanying the disease. The writer has also seen a case (noted below) in which there was a copious discharge of purulent matter from the nose. But Flexner and Barker in their autopsies of acute cases at Lonaconing found the nasal sinuses free from disease. They believed the alimentary tract to be the source of infection. But it may be noted that they at that time still attributed the disease to the micrococcus lanceolatus.

The source of the infection outside of the body is likewise a matter shrouded in obscurity. We know that it is likely to manifest itself in overcrowded, ill-kept quarters. That it is most frequent during winter and spring, and that sudden lowering of temperature especially in wet weather is generally during an epidemic accompanied or followed immediately by the appearance of new cases. These are questions that will probably be explained in the future, but at present they are only suggestive.

There is as yet no evidence to prove the disease contagious. Inoculation experiments since the isolation of the diplococcus intracellularis and its distinction from the pneumococcus have been mainly negative, except when introduced into the pleura or the meninges. If inoculated into the latter a typical meningitis is the result and in the pleura it causes a pleuritis.

The disease is distinctive in that it is essentially primary, while other forms of meningitis are generally secondary to disease located elsewhere, or they are caused by injury in which the seat of infection is made to communicate with external parts. Councilman says, "in tuberculous meningitis we have never found a single case in which the lesion in the meninges could be regarded as primary. The only two cases of apparently primary infection were in the two pneumococcus cases noted, and in one of these the infection may have come from the intestinal canal."

The symptoms are varied in extent and intensity. The onset is usually abrupt and agonizing. Without premonition, the patient is seized with violent pains in the head and back, chill, fever and vomiting. In the severer cases these symptoms, with extreme restlessness, merge into active delirium and spasm, and death may take place in a few hours or days.

The headache is a prominent symptom throughout the course of the disease. It may be general or localized, but is apt to be most marked in the frontal and occipital regions. It may be continuous with acute exacerbations, or it may remit only to assert itself at intervals of various length. It sometimes recurs with striking regularity, but at other times there is no regularity whatever to the returns. Light to the eyes increases the pain in the head, and pains the eyes. The pain in the back is equally intense, and has the same characteristics. It soon extends to the spinal nerve-roots and to the nerves themselves, and motion becomes very painful. Hyperesthesia is soon marked in localized places or it may be general. Some authors mention anesthesia. I have not noted this symptom but can easily see why the exudate should produce it. The pain of meningitis is apt to be of a sharp lancinating character.

Temperature is generally moderate and bears no special relation to the severity of the disease. It may

be subnormal, or in approaching dissolution may reach a very high degree. There is no regular course of fever in meningitis as in typhoid.

Usually vomiting does not continue beyond twenty-four hours, but may be a prominent symptom throughout the course of the disease. More often it is recurrent. The cause of the early vomiting is central, but later, when the secretions are much disturbed, it may be partially due to indigestion. The tongue, slightly coated in mild cases, soon becomes heavily covered with a dark to brown coat, and presents a dry and cracked appearance in the so-called typhoid cases. The mouth is not infrequently covered with sordes. A characteristic feature of the disease is the retracted abdomen, but this condition may be changed in those cases of severe grade with prominent digestive symptoms, and in which intestinal secretions are greatly modified. It is not uncommon to find the abdomen tender, but this is due to the hyperesthesia general over the body, and must not be mistaken for the tenderness of ulcerated intestinal glands. The early history, the absence of the typhoid eruption, want of gurgling in the iliac fossa, and tenderness extending over the entire abdomen, rather than its localization in the iliac region, will usually serve to differentiate it from typhoid.

The pulse is variable and may be very rapid and feeble or it may be fairly hard and slow. It is frequently intermittent, dicrotic and irregular. It may be very rapid at first and then become abnormally slow, or the reverse may be true. It often changes in the same case and bears no relation to the temperature range.

Respiration is usually slightly increased in frequency in cases not complicated with pneumonia, and when so complicated, or in congestion of the lungs, it is increased in proportion to the lung affection. It may be Cheyne-Stokes in character, more especially in cases complicated with albuminuria. Involvement of the nerves of respiration may cause the most painful dyspnea. This may also be caused by disturbed innervation of the larynx. Sighing respiration is also noted.

The most constant form of eruption is the herpetic, and appears about the face and neck. The lips are mostly affected. A petechial eruption on the body or limbs is not quite so common, but is perhaps more characteristic of the disease. Other changes are noted in the skin, at times. The eruption bears no relation to the severity of the other symptoms and it may be absent in the severest cases.

The urine varies from scanty secretion with high specific gravity to polyuria with specific gravity 1002 to 1005. It is frequently alkaline and deposits excess of phosphates. The triple phosphates are especially abundant. Albuminuria is not an infrequent complication and should be constantly looked for. One of the author's cases had vesical paralysis; also paralysis of the sphincter ani.

The bowels are constipated, with very few exceptions. There are, perhaps, more exceptions among children than adults. Flexner and Barker report four cases in the Lonaconing epidemic, which were complicated with dysentery, and which they made the subject of special study. The discharges contained mucus, pus and blood, and the predominating organism was a lancet-shaped coccus, in pairs, apparently encapsulated. They also found bacilli resembling the coli communis, and short chains of streptococci. One of the author's lighter cases was dysenteric, with mucous pus and blood presenting.

Motor and sensory disturbances are a general part of the disease. Vision is disturbed in many cases, and metastatic optic neuritis is not uncommon. Strabismus and nystagmus are common. Sense of taste and smell may be perverted and hearing lost. The latter may, however, be due to suppurative inflammation of the middle ear, as well as to sensory disturbances. Muscular contraction soon manifests itself and we have the retracted head, opisthotonos, orthotonos (Osler), the arms flexed on the chest, the thighs flexed on the abdomen and the legs on the thighs. In this condition the case presents a typical picture.

Flexner and Barker in their report, and Osler, in "Nervous Diseases," edited by Dercum, cite a symptom described by Kernig as pathognomonic of the disease. It is what they call flexion-contracture (called by Kernig, beuge-kontraktur), by which is meant an inability to extend the leg while the thigh was flexed on the abdomen, or at right angles to it, this inability to extend the leg disappearing as the thigh is extended. I am surprised that, in consideration of the hyperemic and inflammatory condition of the nerves and nerve-roots and consequent hyperesthesia, it did not occur to them that this was due to tension on the sciatic nerve and that the same condition obtains in other painful affections of this nerve, as in sciatica neuritis. However, it may serve an important office in differentiating joint complications of the disease from nerve pain, as it differentiates hip-joint disease from sciatica. Epistaxis is a common symptom.

Typical cases not of the severest type are easily recognized after a few days. On the other hand, great difficulty may be experienced very early in the disease, and especially in severe sporadic cases. Malignant scarlatina, in which death occurs before the eruption appears, can be distinguished only by the history of the contagion. The writer has had two such cases, one of which gave no history of contagion, but three others in the same family following immediately with scarlatina, gave evidence for the diagnosis. The other was a child of 3 years in a family in which three older brothers had scarlatina and were convalescing. Without premonition it was suddenly attacked with vomiting, and this was followed immediately by convulsions, the eyes set, teeth tightly closed (trismus), the head drawn back, the back in opisthotonos and frothing at the mouth; soon becoming comatose, it died in about six hours after the first symptoms. Involvement of the nerve centers in the course of other infectious diseases, as diphtheria, pneumonia, typhoid, etc., can usually be differentiated by the symptoms of the primary disease. We think there is no longer any doubt that those cases of the acute infections which manifest the central symptoms are cases of involvement of the nerve centers proper. When we say central symptoms, we do not mean the ordinary delirium of typhoid, nor the coma of uremia. Postmortems in typhoid with central symptoms have revealed the specific typhoid bacillus in the meninges (Ohlmacher, JOURNAL AMERICAN MEDICAL ASSOCIATION, Vol. 29, p. 419), likewise the micrococcus lanceolatus in meningitis complicating pneumonia. Councilman found, besides the diplococcus intracellularis, the tubercle bacillus, pneumococcus, streptococcus, bacillus pyocyanus, staphylococcus pyogenes aureus and the anthrax bacillus.

Tuberculous meningitis is recognized by its insidious and gradual development.

Where two or more members of a family are simultaneously attacked, as in the recent cases of the writer, it is easily mistaken for acute poisoning.

In differentiating meningitis, the fact that a case recovers may have an important significance. Councilman says, "We believe that all infections of the meninges, other than the diplococcus intracellularis, are fatal." The one most important means of differentiating, however, is the examination of the exudate obtained by lumbar puncture, both with the microscope and in culture experiment. Lumbar puncture is said to be made not only with impunity, but in some cases with actual benefit to the patient (Councilman).

Medical treatment, for the main part, aims at the comfort of the patient and the relief of complications as they arise. He should be placed in a large, well ventilated room and the light modified to his comfort. The diet should be liberal and nutritious, milk in quantity being best suited to most cases. Opium in some form is indicated. It relieves pain, quiets the nervous system, lowers the pulse and increases its volume, and frequently lowers the temperature, thus making it possible to better nourish the patient. Bromids are important adjuvants to morphin or other opiates. An important matter in the administration of opiates is to give them cautiously, but increase until the desired effect is produced. They increase the desire for food. To move the bowels, I prefer calomel in small and divided doses, generally 0.065 gram in quarters or sixths; this may be given, when necessary, throughout the course of the disease. These fractions are given every fifteen minutes until the desired quantity is administered.

It is not intended to give here a complete résumé of treatment, since there is nothing new, and it is well discussed in the various text-books, as Hare's "System of Practical Therapeutics," Loomis' "Practice," Dercum's "Nervous Diseases," Rotch's "Pediatrics," and others.

Though the patient becomes very sensitive to touch, at times gentle sponging is grateful, and pain is often markedly modified by gently stroking the part with a soft hand. The surface of the body must be kept warm with flannel clothing, and we believe with Bartholow, that cold to the head is not the best treatment. Small blisters to the back of the neck are useful.

The following cases are of special interest for the simultaneous onset, in three of them, and the severity of two, with complete recovery in forty and forty-three days respectively.

The family of H. lived in a dilapidated house of four small rooms during the winter of 1897 and 1898. It consisted of ten members and the house was poorly furnished, there being but three beds and those very scantily equipped. In fact, there was but one bed that was in a condition for occupancy. The food was probably not all that it should have been; in fact, at the onset of the disease, the family became a county charge and it was found necessary to supply linen, while the balance of the family, except just enough to care for the sick, were removed to other quarters. Feb. 23, 1898, three members of the family, the father, aged 54, and two boys, aged 8 and 10, were simultaneously attacked with headache, pain in the back, chill, fever, vomiting and restlessness. The oldest boy suffered least and his proved an abortive case. After twenty-four hours his symptoms abated and in a week he was practically well, though the petechial eruption, especially on his legs, was far more marked than in the other cases, and the herpetic eruption was not inconsiderable. Both the others became delirious, the delirium being of a noisy character, especially in the man. He was, for a number of days, constantly up and down, often laboring under the delusion that he was ordered either to get up or return to bed, and no assurance to the contrary would induce him to remain in bed. Delusions and hallucinations were a prominent feature of his delirium. Cards, pictures and other wall hangings had to be removed, as they presented to him an army of menacing figures that gave him no slight concern. His speech was not noticeably incoherent, and he would have delusive mental impressions of such lasting effect that he would narrate them as facts, time and again, for days. Delirium did not last so long in the 8 year old boy, though most of the other symptoms were more marked. The herpetic eruption about the mouth was most marked in the man, vesicles forming and rupturing and the lesions coalescing, it presented one large crusted sore. It prevented closure of the mouth and increased the tendency to changes. Petechial spots were noted on the limbs and a light mottling could be seen over the entire body. There was a painful stiffness of the body and limbs, most marked in the right leg, in the knee of which he said he had rheumatism and wanted a plaster put on it. Examination revealed no swelling or redness, and it could be flexed and extended without pain, when the thigh was not flexed at the hip (Kernig's sign). The head was retracted for about two weeks, and for about twice that time he was unable to lower the chin. There was no noticeable opisthotonos. Pain in the back, head and right leg, at first constant, after several weeks became remittent, and lasted throughout the course of the disease. There were photophobia and deafness. The teeth were covered with sordes, and the tongue had a typhoid appearance. About the beginning of the second week there was a sudden discharge of purulent matter, in large quantity, from the nose. It continued for several days. There was general hyperesthesia and movements were generally painful. The pulse ranged from 85 to 110. It was soft and unsteady and stimulants were given, in moderation, after the first or second week. He was a habitual user of intoxicants and in considerable quantity, though he seldom became intoxicated. Temperature ranged from 99 to 102 degrees F., but was at times subnormal. Respiration was not materially modified. During the second week there was albuminuria, which lasted about a week. Potassii acetas was used, with spiritus etheris nitrosi to relieve this complication. During the third week there was vesical paralysis, requiring catheterization. Constipation existed throughout the disease and was relieved with calomel, as indicated. Milk was the main diet, of which he probably took, on an average, a quart a day, and never less than that half that quantity, except during the first few days.

The 8 year old boy had less eruption than either of the others. The herpetic spots were isolated and few in number, although he had some about the mouth, nose, and one on the upper lid of the right eye. His pains were excruciating, except as they were modified by large doses of morphin. There was no region of the body in which pain was not complained of.

Hyperesthesia was marked throughout. Retraction of the head became so marked that deglutition became at times very difficult or impossible. There was extreme opisthotonos, which, with the retraction of the head, continued for fully five weeks. His arms were flexed on the abdomen or chest, the lower limbs drawn up and flexed at the knees. The Kernig symptom was present for some time, but later any attempt at extension became painful. He lay on his side in the manner indicated and, to take nourishment, with some assistance, he would turn on his abdomen, which would throw the retracted head in an upright position so that he could receive it in a fairly natural manner. In assuming this position, however, he never failed to implore his attendant to be careful. There was deafness and intolerance of light. His pulse during the first week ranged from 100 to 120 per minute, but during the second week it dropped to from 55 to 70 (mostly beating about 60) where it remained for some weeks, then it again averaged about 90, and so remained until he was discharged. Temperature for first thirty-six hours was from 100 to 103. After that seldom above 101, and ranged mostly from 99 to 100. At times it was subnormal. Respiration was from 20 to 30, mostly about 24 per minute. During the second, third and fourth weeks it was markedly Cheyne-Stokes in character, the period of apnea lasting as long as twenty-five seconds. The pulse was also much influenced in its rhythm and volume during these changes in the respiration. The Cheyne-Stokes phenomenon was most marked during a period of albuminuria lasting several days, during the fourth week. Twice he had an attack of dyspnea with violent, painful constriction in the chest. His face had the anxious expression of one suffocating, while he tore wildly at the clothes about the chest. The urine was examined in both cases every day or two, both chemically and microscopically. The boy's urine was frequently abundant, with low specific gravity, 1005 alkaline, with excess of triple phosphates. At times, however, it was scanty, with high specific gravity, 1025. The father's urine was generally fairly concentrated.

Both these cases received morphin and the boy took, during his illness, very much more than his father. At times the boy required 0.016 gram every four hours to control the pain. It was, however, given mostly in 0.008 gram doses every two hours, but while giving it this way an extra dose was required at times. The morphin was only given as required, and as he began to improve intervals of half a day to a day would elapse in which it was not necessary to give morphin, but when the pain did recur it would yield to nothing short of the full dose. Even the very last paroxysm of pain required no less than three doses of the morphin. Atropia was always given with the morphin but not increased with it. Small doses of bromid were given throughout the illness. With the large doses of morphin required by the boy, his desire for nourishment did not seem impaired, and it is worthy of note that he took an average of a third more milk than his father, taking seldom less than a quart per day. With a view of promoting gastric digestion dilute hydrochloric acid was given in small doses. It did not, however, improve the digestion, but seemed to aggravate the general symptoms. The potassii acetas, on the other hand, seemed to have a favorable influence. Fowler's solution, in small doses, was tried as a reconstructive after convalescence was established, but was soon discontinued, as it seemed to increase hyperesthesia and general symptoms of neuritis. We think this remedy, if given at all, should be given cautiously and not so long as symptoms of neuritis are at all marked.

February 25 another boy, aged 15, became sick with symptoms of the disease, but they were mild, and in a week he was again feeling quite well. Two other members of the family, some days later, became sick and were indisposed for several days, but the symptoms did not point sufficiently to the disease to include them. There was, however, one other case in another family, a little girl 8 years old, who was sick fourteen days. Early symptoms were the same as those of cases described. There was, however, in this case, marked dysenteric discharges containing mucus, pus and blood. The case was also markedly intermittent in type. The pain was controlled with acetanilid, no opiate being given. Bromid was given in small quantity.

All these cases were frequently and carefully examined for signs of pulmonary changes, but with negative results, at least so far as physical signs were concerned. The disturbed or slightly increased respiration at times noted was due either to disturbed central innervation or peripheral nerve involvement making normal respiration painful, and hence the more frequent but shallow respirations.

OBSERVATIONS UPON THE SPECIFIC TREATMENT OF TUBERCULOSIS.

Read before the Monroe County (Michigan) Medical Society, April 20, 1898.

BY P. S. ROOT, M.D.
MONROE, MICH.

Briefly, today the pathology of tuberculosis takes into consideration but one real causative factor, the bacillus. Yet apart from this assumption I can not disabuse my mind of the impression that we may and do have a form of phthisis in which this form of bacillus does not directly figure. Such cases are characterized by a low form of inflammatory action, a fibrosis, if you please, with little or no fever. The expectoration is mucopurulent and profuse; consolidation, usually at the base, is present, with the usual classic symptoms. I have made many examinations of the sputum of these cases, finding no bacilli. I take it that this class of cases constitutes the long-drawn-out ones, lasting perhaps for years. They are doubtless susceptible to true tubercular infection, which infection usually runs to a rapid termination. The comparative absence of fever and the failure to find the bacilli, point quite conclusively to this form of consumption. If, then, we have among us this separate type of disease, we perhaps have an explanation of some failures along the lines of specific treatment.

Since the discovery of the bacilli of tuberculosis by Koch, in 1882, there has been a renewed impulse along various lines of investigation, with a view to find some means or remedy inimical to the growth of this bacillus.

If we stop to consider the fearful mortality of consumption we shall see how eminently humane and just are the efforts to mitigate, cure or control this terrible scourge. The true physician will strive to aid in this conquest, will try all things and hold fast to that which is good. In the use of Koch's crude

tuberculin, we found for the first time an agent capable of influencing the tubercular process. That this influence was not salutary, I need not tell you. And yet it was, perhaps, but the too powerful impression of the remedy which increased the degenerative processes. Koch's discovery did not, then, prove to be a distinctly curative agency; but it did serve to demonstrate that in tuberculin we had an agent whose influence upon tuberculosis was specific, and hence has followed the present spirit of investigation by physicians of every country.

In directing attention to a few agents of more or less conceded specific effect, we will confine our remarks to such remedies as have been used hypodermically, because by no other method can we so certainly obtain the real physiologic effect of any medicine. Among the first of these agents we may mention the Shurly-Gibbes treatment, the basis of which was gold and iodin. That these agents were possessed of some virtue I do not doubt; and yet the result has not warranted a very general application. While Drs. Shurly and Gibbes were able to immune monkeys, the remedies occasioned so much pain in their hypodermic use upon patients that it was difficult to properly carry out the indications. Soon after the treatment was placed before the profession, I obtained some very good results. One patient, whose recovery was thought impossible, is alive and in fair health today. Still, as I said, very few would submit to the pain of these injections. Within the past few months my friend, Dr. E. L. Shurly of Detroit, Mich., has found a solvent for iodin which does not occasion much irritation. The solvent in question is the oil of cloves. It has been found that one and one-half grains of iodin can be dissolved in one drachm of oil of cloves. Of this solution ten minims is given. Better still is it to add an equal amount of sterilized olive oil and then give twenty minims. The injection is given once a day deeply into the thigh or muscles of the back. In the use of this remedy my experience, as well as that of Dr. Shurly, has been fairly good. It is quickly absorbed and little or no irritation follows. While the oil of cloves is used simply as a solvent it may exercise some beneficial effect, for this oil has received considerable commendation in the treatment of tuberculosis, given internally.

The use of nuclein in phthisis is founded upon the theory advanced by Metchnikoff, that the white blood corpuscles act as phagocytes in destroying microorganisms. It has been proven beyond doubt that solutions of nuclein increase leucocytosis to a marked degree. At one time it was thought that this increase was only relative, but experiment shows it to have been absolute. I have been able to observe the increase within two hours after the exhibition of the remedy. If, therefore, the theory of action were to work ideally, we might expect these leucocytes to act as scavengers and to destroy the tubercle bacilli or impair their infective power. To a certain extent these results do follow its use. Professor Vaughan of Ann Arbor has found the remedy of pretty general utility in early manifestations of the disease. The consensus of opinion indicates that nuclein is deserving of further trial and that more or less benefit follows its use. In my own experience, I have noticed temporary improvement in nearly all cases. This improvement, however, has not been sufficiently permanent to inspire me with much confidence. Still, in properly selected cases, good will undoubtedly result from its use. At present it is placed upon the market in a 5 per cent. solution, which may be given either by the stomach or hypodermically. If given by the mouth it should be upon an empty stomach in from one to two drachm doses three times a day; hypodermically, fifteen to sixty minims, once a day. It must not be inferred that nuclein has any distinctive action upon the tubercle bacilli, but that it acts more or less alike upon all infective germs and should therefore offer some curative aid to their resulting diseases. It is also claimed by Dr. Vaughan to possess direct germicidal action.

Serotherapy.—After the apparent failure of tuberculin, Dr. Maragliano of Genoa devised a serum from the use of which good results are claimed. This serum is supposed to be derived from the horse in a manner somewhat analogous to that of the antitoxin of diphtheria. Dr. Maragliano's method of treatment claims 68 per cent. of improvement. The details of the manufacture and use of this serum are not familiar to the profession of this country, and I have seen no mention of any trial having been made in America. However, Dr. Maragliano's professional reputation is such that his deductions have had no inconsiderable weight with the medical profession of the world.

Dr. P. Paquin of St. Louis, has produced a horse antitubercle serum from the use of which he claims 66 per cent. improvement. Other experimenters have also reported favorably, so that it seems just to accord to these antitoxins a permanent place in the serotherapy of tuberculosis. Both are given hypodermically.

Finally, we come to the consideration of the various modified tuberculins. These are so numerous, and the claims based upon their use so diverse, that I can not hope to give anything like an exhaustive review.

Among the more common may be named antiphthisin, tuberculin R., purified tuberculin, watery extract of tubercle bacilli and oxytuberculin. These various tuberculins differ mainly in the amount of organic matter which they severally contain, also in their composition as to the presence of toxin or antitoxin. The use of some of them is followed by a rise of temperature, somewhat characteristic of the original tuberculin. It is therefore advised to begin with a small dose and increase very gradually. Dr. Karl von Ruck of Asheville, N. C., has used the purified tuberculin in twenty cases with an improvement in 90 per cent. Four cases have made an absolute recovery and five more are rapidly nearing that result. Koch's new tuberculin seems to have failed and the use of antiphthisin has not been followed by very flattering results, due possibly to improper selection of cases. The doses of these preparations are from 0.1 to 3 c.c. No claims are made for advanced cases. Oxytuberculin is a comparatively recent addition to this line and was brought out by Dr. Joseph Hirschfelder of San Francisco, Cal. His first general communication to the profession was made at the meeting of the AMERICAN MEDICAL ASSOCIATION in June of last year. Dr. Hirschfelder is a careful and conservative investigator and his deductions are therefore worthy of some consideration. The method of manufacture consists in gradually adding peroxid of hydrogen to true tuberculin and then sterilizing from 120 to 130 hours. By this "oxidation" process the infective power of the bacilli is destroyed and there is left simply the oxytoxin, the exhibition of which is not followed by interference with the temperature curve. If this toxin be added

to virulent cultures of this germ, growth ceases; and if applied to local tubercular ulcerations, the bacilli disappear and the ulcers heal promptly. Dr. Hirschfelder closes an article in the *Medical News* with these words: "All these tests show conclusively that the oxytuberculin inhibits the growth of the bacillus of tuberculosis. That this is a specific effect and not due to a general antiseptic action, is proved by the facility with which other germs develop in the fluid. From all the statements made I believe I have proved beyond a reasonable doubt that consumption may be cured by the use of oxytuberculin, if the remedy is administered during the early stages of the disease, and that the cure is effected by direct action upon the causative germ."

My own observations in the trial of this remedy are confined to three cases, none of which come under the classification of *early*. Case 1 was one of galloping phthisis, in a patient whose mother and sister had died of tuberculosis. The disease first declared itself in June, 1897. The area of tubercular infiltration spread with almost the rapidity of pneumonitis and very soon involved the lower and part of the upper lobe of the left lung. The sputa contained large numbers of bacilli. Within a short time a large abscess had formed in the central portion of the lung. Temperature ranged from 101 to 104 degrees, pulse from 110 to 120. About this stage of the disease I began the hypodermic use of oxytuberculin in doses of 12 c.c. The results were strikingly beneficial; temperature fell, cough decreased, night sweats were slight and at times none, while the appetite improved and the bacilli could no longer be found. We had, however, to deal with the septic complication incident to the abscess, which without doubt will carry the patient off before long. Were it possible to have drained the abscess cavity, I believe this patient might have recovered, for even at this date the right lung remains unimpaired.

Case 2 was of some three years' standing, or rather is of that length of time, during which time the patient had tubercular pleurisy, two tubercular abscesses of the sternum and a small abscess or cavity in the upper lobe of the left lung. The pulse was rapid, 112, cough annoying, expectoration profuse and well stocked with tubercle bacilli. The temperature ran constantly above 100 degrees. After about six weeks' treatment with oxytuberculin the temperature became normal and has so remained and the bacilli have nearly disappeared from the sputa, with general improvement in nutrition and respiratory power. Dulness has diminished to a marked degree.

Case 3 was one of three years' duration. Both lungs were involved, with a small cavity in the left one. The patient was confined to the bed, with high fever, night sweats and constant cough, bacilli numerous, nutrition poor. Under oxytuberculin she has steadily gained in flesh and the appetite and digestion are good. There is no fever, nor has there been for several weeks. She is constantly about the house and attends to many duties. The last examination of sputum failed to show but few bacilli, and these were difficult to find.

If time had permitted, I would have been pleased to have gone into the details regarding these cases, and yet I think I have shown that this oxytuberculin must be possessed of a wonderful (curative) power. None have been absolutely cured, but each case has demonstrated the benefits derived from this treatment. Not one of the cases could be classified as early, yet the manifest changes have been such as to point pretty certainly to Dr. Hirschfelder's conclusion that in early cases this remedy will cure a large majority.

The large dose and consequent expense of the oxytuberculin will probably to a certain extent prevent its general use. It costs $5 for three ounces and is given in doses of from 5 to 20 c.c. hypodermically, daily. Thus far I have used 140 ounces. The injection does not cause reaction or more irritation than an equal amount of water would do. I have never had an abscess or a symptom of one following the injection. If the theory of its action be correct, we have a remedy which will open up a new era in the treatment of tubercular joint diseases; for instead of using iodoform and like antiseptics, we shall simply inject oxytuberculin with possibly absolute results.

In speaking of these agents as specifics it must not be inferred that they offer the means of a certain cure, only so far as the real causative elements are concerned. The pathologic results of the invasion of the tubercular bacilli may remain, and if sufficiently grave, death will result; yet it is to me remarkable that such extensive and rapid repair follows the exhibition of this modified tuberculin. And finally, it seems to me conclusive that, if ever we find a true specific for tuberculosis, it will be among these agents. There are those who maintain that there is no foundation or proof upon which to build our hope for a treatment of tuberculosis by bacterio-therapy. Scientific skepticism is just, if it be predicated upon the correct appreciation of therapeutic deductions. Metaphysically speaking, we do not know the *modus operandi* of these various tuberculins, but for that matter, do we comprehend the intrinsic or dynamic power of any common remedial agent? Shall we say that quinin does not cure malarial fever by its specific action upon the plasmodium malariæ? Or that vaccine does not inhibit smallpox? These questions and their details must, therefore, be worked out upon lines of scientific investigation and close observation. If in the end we attain the desired result, what more glorious could redound to the medical profession and to the world? And if we fail, it can not be said of us that we considered the object unworthy our efforts.

TUBERCULOSIS OF THE MAMMARY GLAND.

Read by title at the meeting of the Ohio State Medical Society, May 6, 1898.

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Until very recent times tuberculosis of the breast has been considered one of the rarest surgical conditions; this is especially true of primary tuberculosis of this gland. Prior to 1880 we find practically no mention of this condition in surgical treatises save by Astley Cooper and Velpeau. Billroth, in his monograph on diseases of the breast, regarding all previous reports on this subject as inaccurate and lacking histologic confirmation, mentions a case of undoubted tuberculosis of the breast found postmortem in a woman who had died of pulmonary and intestinal tuberculosis. Since this time reports of these cases have multiplied, although the total number of authenticated cases of primary tuberculosis is still considerably below fifty. Of this number less than ten have been contributed

by our own countrymen, two of them having been reported by Powers of Denver. In view of the fact that the diagnosis is by no means always easy, and particularly early in the course of the disease, and regarding the number in which case reports have been added since attention has been drawn to this subject by clinicians, it is fair to presume that the condition of breast tuberculosis is more common than has been heretofore supposed, and that more cases will be brought to light as a growing familiarity with the clinical manifestations makes its recognition possible.

The following case came under my observation, having been under the care of Dr. Irvine of Tolesboro, Kentucky.

Miss Lizzie D., aged 31 years, weight 108 pounds, rather tall and of slight physique, was admitted to my service at the Presbyterian Hospital on Nov. 22, 1897. Both of her parents are living and well. She has four brothers and six sisters living. A brother has pulmonary tuberculosis, and one sister "is in poor health." Two cousins died of consumption. The patient had measles at the age of 20 years. Since then she has had a slight cough with a small amount of frothy expectoration. She has never had hemoptysis. Four years ago she had pneumonia, from which she recovered rather slowly. In January, 1897, she noticed a swelling in the left axilla, which was painful. It was quite large and anticipating suppuration, poultices were applied. Suppuration failed to occur, however, and in time the swelling disappeared. Two weeks after its disappearance she noticed a swelling in the upper and outer quadrant of the left breast. This also was poulticed and disappeared without breaking down. Both of these conditions were quite painful. The pain, without being constant, was sufficiently severe to frequently interfere with sleep. It is described as having been lancinating and radiating from the breast into the axilla and down the arm. It is further described as bearing no relation to the occurrence of menstruation. Gradually swelling and hardening appeared around the left nipple, and during the last two weeks a certain amount of softening seems to have occurred. Temperature 99.2 degrees.

The physical examination shows slightly roughened breathing at the right apex and also some lengthening of the expiratory murmur; lungs otherwise normal; heart normal; considerable enlargement of the left breast; areola enlarged and of a dull cyanotic hue, nipple not retracted. The region of the areola is soft and fluctuation can here be made out. Immediately beneath and surrounding the nipple there is felt a hard mass intimately connected with the glandular tissue but freely movable upon the chest wall. The skin was freely movable over this mass except in the region of the areola where it was in places adherent. Manipulation and pressure was decidedly painful. There was no enlargement of the axillary gland to be felt. Aspiration at the point of fluctuation yielded a small quantity of pale fluid in which tubercle bacilli were demonstrated in small number.

The patient was operated on Nov. 23, 1897; an incision was made into the mass from the nipple toward the axilla and a cavity entered about the size of a hickory-nut, and a quantity of thick cheesy pus evacuated. The entire breast was removed. In view of the entire disappearance of the former enlargement the axilla was not entered. The patient was allowed to return home on November 29, one week after admission, primary union having occurred. On April 6, 1898, Dr. Irvine assured me that the patient had remained entirely well.

By inadvertence the specimen which had been ordered preserved for histologic examination was lost, and I am therefore unable to describe the microscopic appearance. Macroscopically the mass presented a cavity lined with characteristic tubercular granulation tissue and surrounded by an infiltration rather firm in character and extending from the principal mass chiefly toward the axilla. This, together with the discovery of tubercle bacilli, leaves no doubt in my mind as to its tuberculous nature.

Studied from an etiologic point of view it seems rather remarkable that the breast should so seldom be found the seat of tubercular disease. Its anatomic relations and its structure and physiology are such that a frequent tuberculous infection would seem *a priori* probable. But were we even disposed to grant that it escapes clinical recognition fairly often, it must still be regarded as an infrequent occurrence. Powers states that of 185 cases operated on for breast neoplasms, conditions other than mastitis, but one case of tuberculosis was found, and they were all examined microscopically.

The determination of the infection in this particular locality has been explained in three ways: 1. A direct infection through the milk ducts; 2, an infection through tne medium of the blood current; 3, by means of the lymph vessels. To these should be added infection by direct extension from a focus situated primarily in one of the contiguous structures. It is true that in this case we should not be dealing with a primary breast tuberculosis, but as Recnick has shown, the primary focus may be very insignificant clinically or even altogether undiscoverable. Direct infection from without, such as might take place through a fissured nipple or through the milk ducts, and infection by means of the blood current can very rarely be proved, but that pregnancy and lactation do exert an influence in this regard is shown by cases reported by Habermaas, Orthmann, Davis and Hanks. The theory of infection through lymphatic channels is given strength, as remarked by Delbet, by the fairly frequent initiatory swelling of the axillary glands. He speaks of no less than seven cases where the affection of the axillary glands was the original clinical manifestation. This requires, however, the assumption of retrograde lymphatic metastasis; a condition which must be looked upon with a degree of incredulity. It would seem more likely that in such cases we had to deal with a primary focus in the breast of inconsiderable extent, and overshadowed clinically by the secondary glandular infection. In the next place it should be remembered that in all probability the glandular enlargement is often indicative of simple inflammatory change and not tuberculous involvement. I have assumed this to be true of my own case.

Pathologically the disease has been described as occurring in two forms, the disseminated and the confluent, the latter of which is by far the more common. In this form we have to deal with one or less often several fairly large nodules, varying in their consistence and appearance upon section according to the amount of caseation and liquefaction which has occurred. Microscopically we find the formation of more or less typic tubercles with their epithelioid and giant cells and accompanying round cell infiltration. Characteristic also are the degenerative changes, but especially, of course, the existence in the tissues

of the tubercle bacilli. Sooner or later there appear marked caseation and liquefaction, and finally secondary infection with pyogenic organisms; there results then the formation of abscesses and sinuses just as in tuberculous processes elsewhere.

Clinically, primary tuberculosis of the breast presents itself in a variety of ways. It is probable from a study of the clincal histories that not infrequently the condition escapes recognition for a long time, not only by the physician but by the patient. This is likely to occur when it progresses slowly in an individual otherwise healthy and when pain is either absent or insignificant. Thus Shattock reports the case of a girl 21 years of age who six years before noticed a lump the size of a hazelnut in the left breast, which was occasionally the seat of slight and transient pain. During the last year the axillary glands were enlarged. Upon removal and histologic examination it proved to be typically tuberculous. On the other hand, the condition may be painful in its very incipiency. Not infrequently there is no pain whatever complained of until, with the advent of secondary infection, an acute inflammatory condition develops. As before remarked, the axillary lymphatic enlargement is apparently the first symptom in a considerable proportion of cases. In other cases this lymphatic enlargement has been absent altogether during the whole course. However, it occurs at one time or another in 75 per cent. of all cases, and according to Delbet, suppuration occurs in the lymphatics as a rule before it does in the breast itself. The physical examination of the mamma will, as a rule, disclose a tumor, rather ill-defined, closely connected with the gland substance, but freely movable upon the wall of the chest and beneath the skin. The edge of the mass has not the sharply defined boundary of simple chronic suppurative mastitis and not infrequently processes extend from the principal mass, similar to those of carcinoma. The induration is most frequent in the external segment of the gland and occasionally a firm cord of thickened lymphatics may be felt, continuous with those of the axilla. In consistence the mass is rarely uniform, save in the very earliest stages. Usual is the occurrence in some place or places of softened areas or even pronounced fluctuation. In some chronic cases retraction of the nipple has been described.

The disease is one of young adults chiefly; more than one-half of the cases have been described as occurring between the ages of 25 and 35 years and in women, with very few exceptions. The left side is considerably more often affected than the right.

Our chief interest in breast tuberculosis must be centered in the diagnosis. When liquefaction has occurred to a considerable degree, when sinuses have formed or when the condition affects a young woman of pronounced tuberculous habit, the diagnosis may be extremely easy; on the other hand, when found in one more advanced in years, say 35 or over, and especially when but little softening has occurred, carcinoma may be ruled out with the greatest difficulty, or not at all. This may be true of chronic simple suppurative mastitis also or even of the chronic interstitial form. When any degree of softening has occurred, an exploratory aspiration may determine the diagnosis definitely, as in my own case, by the withdrawal of broken down material in which tubercle bacilli may be found.

A perusal of some of the casuistic literature on the subject has brought me to the conviction that mammary tuberculosis is by no means as infrequent as has been assumed by some. Thus, Albert speaks of having seen fourteen cases in all and four of them within one year. The application of modern methods of diagnosis, and the examination for tubercle bacilli in particular, together with a more accurate knowlege of the clinical manifestations of mammary tuberculosis will, I truly believe, cause some cases formerly classed as simple chronic abscess to be placed under the rubric of tuberculosis. This refers especially to those cases occurring in quite young unmarried women with no cause apparent for the development of abscess. As such an example I might cite a case reported by Marcus and operated by Ransohoff. A girl of 17 years, unmarried, had been suffering for years with severe pains in the breast, for which a physical basis had not been found. Rather suddenly there developed the symptoms of suppuration. Pus was discharged upon incision, but a fistula remained, necessitating a second operation, at which the gland was found riddled with suppurating foci. In conversation with the operator he acknowledged the possibility of its having been tuberculosis. The patient is known to be enjoying perfect health at present.

The prognosis of this affection is about what we might assume from *a priori* considerations. If treated by radical surgical intervention, a recurrence *in loco* is in the extreme improbable, but the disease, betokening by its very presence a lowered power of resistance to the invasion of tubercle bacilli, and possibly an environment favorable to their development, is apt afterward to appear in other and more vital organs, the lungs in particular, and thus bring about a fatal termination. This has been the later history in quite a number of instances.

In the treatment of mammary tuberculosis we have but to follow well recognized surgical principles. With Robinson and others I believe it unnecessary to enter the axilla unless there be an appreciable enlargement of the lymph glands. In refraining from partial operations upon the breast itself and making the amputation in every recognized case of primary mammary tuberculosis, we can err only on the side of wisdom.

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NEPHRECTOMY.

Read before the Michigan State Medical Society, May 6, 1898.

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Formerly removal of the kidney was a most formidable operation as the mortality was from 85 to 90 per cent. It was only performed in the very last stages, as a *dernier ressort*. Diagnosis also being very difficult, the morbid conditions for which we now operate and remove the kidney, were treated by internal or external medications. But with the advent of aseptic surgery, great improvement has taken place, and the death record following operations has been so much lessened that, today, it is as low as the general run of

operations involving the peritoneum. The technique has been simplified, so that today no abdominal surgeon hesitates to remove the kidney when indicated.

Diagnosis.—The diagnosis of pathologic conditions requiring removal of the kidney is not easy, the symptoms in many cases being very obscure. Pain in the back is among the symptoms considered indicative of kidney troubles, and still how seldom is this the case. I suppose pain in the back has not once in fifty times any connection with renal disease, but if there is a supposition that this is the case, a careful examination of the urine must be made.

Urine analyses, as a rule, are made very superficially and the simple test for albumin or sugar is not sufficient. A most careful microscopic examination must be made, as well as chemic analysis. The microscope will show us epithelium from various parts of the urinary track, if it is diseased, and by the character of the epithelium we can tell where the disease is. Very often we will find no epithelium, and the urine must be examined repeatedly; and even then in a great many cases of diseases of the kidney of various kinds absolutely nothing will be found in the urine to help in diagnosis. One reason of this is that in a great many of these cases the ureter of the affected kidney is closed up, and consequently we only get the urine from the healthy kidney.

When there is an enlargement, a tumor, it is easy to make a diagnosis, because we get the swelling in the region of the kidney. Still, frequently, adhesions to the liver have taken place and it is absolutely impossible to diagnosticate from disease of the liver; but by careful palpation and percussion, enlargement of the kidney can, as a rule, be readily made out, except in very fat subjects.

Renal calculi, on account of the excruciating pain and the previous history, can more readily be diagnosticated. It is only by the most careful attention to the history and progress of the disease, and all the symptoms connected with the particular case, that the diagnosis can be made; but sometimes it is impossible and it can only be made after an exploratory operation. To show how very difficult it is, I mention one case operated on last year.

A woman, 60 years old, was taken with chills and fever, which continued for five months. She was first treated for typhoid fever, then chronic malaria toxemia, having a temperature varying from 102 to 104 degrees. She was finally attended by an able practitioner, who made the diagnosis of septicemia, but could not locate the pus. He sent her to me. The urinary analysis was negative, the abdomen was enlarged, the muscles were rigid so that palpation was impossible; the whole abdomen seemed evenly distended, and the liver seemed enlarged. The woman walked around feeling perfectly well, and had absolutely no pain anywhere, but every few days she would have a severe chill, and had a constant temperature of from 101 to 105 degrees. I put her under an anesthetic and when the abdominal walls were completely relaxed, I could distinctly feel an enlargement below the liver, evidently a kidney filled with pus, with the ureter closed. The next day I removed the kidney, which contained a quart of pus and she made an ideal recovery.

INDICATIONS FOR REMOVAL OF THE KIDNEY.

1. The reflex and other symptoms produced by a movable kidney, sometimes require its removal, after repeated efforts have been made to stitch it in place. 2. Renal calculi, although frequently these can be removed, and the kidney left in place. 2. Incurable urinary fistulæ. 4. Suppurating kidneys, hydronephrosis. 5. Tumors of the kidneys, benign or malign.

Technique of the operation.—The kidney may be reached from the loin or from the front through the abdomen. It seems to me that the selection must depend upon the character of the case. If the kidney is small, it can be reached from behind, and removed without opening the abdomen; but if the kidney is large, that is suppurating, hydronephrotic or contains a tumor, it is best to make the opening anteriorly, at the edge of the peritoneum, which must not necessarily be opened, unless the case is obscure and where it is necessary to explore the other abdominal organs.

Frequently there are gall stones complicating these cases, and then it is a good thing to make the incision at the outer edge of the rectus, remove the gall stones, close your peritoneal cavity, and then shove the peritoneum aside, making your way around it to reach the kidney.

In all large growths, it is very difficult to remove the kidney from the rear, difficult to get at blood vessels, and it is advisable to make your incision well forward, say from the anterior superior spinæ of the ilium straight upward; sometimes make a transverse incision from this, cut toward the back as far as necessary, make a T-shaped incision, although I like to avoid it and usually make a plain straight cut.

All surgeons have found by experience, that cases come in groups, and so I have lately come across a number of cases requiring removal of the kidney.

Case 1.—Mrs. B., aged 58 years, had an immense growth on the left side, which had been coming on for a year. Thirty-three years previously she had fallen and then noticed "a lump on the left side," but it never caused much trouble until a year ago, when it began to enlarge and continued to do so until I saw her. She had passed the menopause and was otherwise in fair health. She did not suffer much from pain, but the increasing size of the tumor alarmed her very much. It was a plain case of enlarged kidney, probably hydronephrosis. She went to Harper Hospital and I operated on her January 7. I made an incision at the outer edge of the rectus, opened the peritoneum for the purpose of exploring the abdominal cavity, and feeling the right kidney, I found everything all right. I closed the incision in the peritoneum, and made a transverse cut backward for two and one-half inches, shoving the peritoneum to one side. I could easily reach the growth and enucleate. Leaving in a small rubber drain, I closed the incision with silkworm sutures, and the patient made a rapid recovery, being up in ten days.

Case 2.—Miss R., aged 28 years, had been ailing for a year with gradual decline, and swelling in the left side in the region of the kidney. She was sent to me by Dr. Croman of Mt. Clemens. I diagnosticated a suppurating tubercular kidney. She was sent to St. Mary's Hospital. Finding her greatly emaciated, and evidently suffering from tuberculosis, I did not think it advisable to remove the kidney, but simply made a transverse incision between the ribs and the crest of the ilium down to the kidney, which I opened. About a pint of pus was removed, the cavity washed out, and a gauze drain inserted; the latter was removed in forty-eight hours and another one inserted. The patient made a rapid recovery, and in a few days developed a voracious appetite. In two weeks I allowed her to go home, although there was still a discharge, telling her that the kidney would probably have to be removed. She gained for six weeks and then began to decline. She returned to the hospital, where I removed the kidney, February 3, just two months after the first operation, keeping in a good large drain for a few days. Afterward she rapidly gained, and is now perfectly well, there being no evidence of tubercular deposits anywhere else.

Case 3.—Mrs. W., aged 24 years, had always been delicate from childhood, and a swelling had been noticed in the region of the left kidney ever since she could remember. She was married, menstruated regularly, but had no children. During the past three months the growth on the left side increased and caused considerable distress. I considered it a hydronephrotic kidney, and urged its removal. She went to Harper

Hospital, February 22, and I removed it, making a transverse incision just below the ribs. I easily reached the growth after cutting through the muscles. It was certainly cystic but did not seem to be a kidney, so I drew off the fluid and then could easily enucleate it. From its general appearance, although greatly distended, I decided it was a kidney. Examining the cavity again, I was astonished to find another kidney apparently perfectly normal, but small; having put my finger into the peritoneum, I reached over to the right side and found the right kidney normal. The kidney removed had evidently never functionated for years, if ever, one of those rudimentary, supplementary kidneys very rarely found. The woman made an uninterrupted recovery. Dr. Bird, who kindly sent her, reports today that she is feeling better than in years.

Case 4.—Mrs. S., aged 57 years, brought to me from Indiana, had a large tumor filling the abdomen and reaching down to the pelvis. The doctor supposed it to be an enlarged spleen and after careful examination I concurred in this. It reached down to the right iliac fossa, was semi fluctuating and might have been taken for an ovarian tumor, but careful examination showed that it was connected with the pelvic organs, and the history, which is perfectly clear, showed that it started on the left side just below the ribs and had grown downward, increasing steadily. She went to Harper Hospital and I operated on her, March 9, making an incision from the ribs downward at the outer edge of the left rectus into the peritoneum. Introducing my hand into the abdominal cavity, I found the growth behind the peritoneum. The right kidney was all right. The liver and spleen and all the abdominal organs were normal. The tumor was behind the peritoneum, and evidently connected with the kidney. I closed the incision in the peritoneum and made a cut backward shoving the peritoneum forward. I had little trouble in reaching the growth, tapped it and removed over a gallon of fluid, and could easily shell it out, finding it to be a kidney containing a stone. I put in a gauze drain and sewed up the wound with silkworm sutures. The whole operation took twenty-three minutes. She made a splendid recovery and in fifteen days returned home.

These cases occurring within three months and all recovering, is very fortunate. In all the cases, I use dry sterilized catgut ligatures, chloroform as an anesthetic and, for external sutures, silkworm gut.

DERMOID CYST OF THE OVARY, WITH REPORT OF TWO CASES.

Read before the Union Medical Association of N. E. Ohio, at Akron, Ohio, Feb. 8, 1898.

BY J. F. FOX, M.D.
NEW PHILADELPHIA, OHIO.

A dermoid cyst may be defined as a heterotopic tumor, containing the products of epithelial proliferation, fat, hair, teeth, cholesterin, bone, etc. They were first described by Lebert in 1852, who applied the term "dermoid" to all cysts lined by a cyst wall resembling in structure that of the external skin. These cysts are found in nearly all parts of the body, the ovaries, testicle, orbit, floor of the mouth, brain, eye, lungs, anterior mediastinum and mesentery. They occur, however, far more frequently in the ovary. In 188 cases of dermoid cysts collected by Lebert, the ovary was found to be the seat of the tumor in 129 cases, being nearly 70 per cent. of the entire number recorded.

According to Senn the wall of a dermoid cyst is composed of connective tissue, its inner surface is often smooth resembling a serous surface, but microscopic examination always reveals an epithelial lining composed, according to the character of the epithelial cells, of one or more layers. If the cysts are lined with columnar or ciliated epithelium, the cells are arranged, as a rule, in a single layer; if on the contrary the matrix represents skin in place of mucous membrane, pavement cells in many layers line the cyst. In cyst wall supplied with the appendages of the skin, these appendages are seen and occupy the same relation to the cutis as in normal skin. Hair is the most frequent of the cutaneous appendages in dermoids. The hair in a dermoid, called by Virchow lanugo, is fine and of a blonde or light brown color, even in negroes. It is interesting to note that the hair found in ovarian dermoids of aged persons is white, also baldness of the inner surface of dermoids is as often met with as baldness of the scalp; the hair grows, as on the skin, from perfect hair follicles. The teeth found in these cysts are composed of dentine, enamel and cementum, arranged in the same manner as in normal teeth, and they are developed on the same plan.

Senn also claims that the cutaneous lining of dermoid cysts, like the external skin, is subject to the formation of benign and malignant growths. Carcinoma may develop in a dermoid cyst. Benign epithelial tumors, papilloma and adenoma are frequently met with.

In regard to the origin of these peculiar growths, physiologists have been very much at sea; many theories have been advanced; the theory of impaction advanced by Verneuil and accepted by a number of other investigators seems to be the most tenable. At one time the finding one of these growths in the ovary of an unmarried woman was presumptive evidence that the was unchaste, but this idea was dissipated as soon as examples were reported existing in children. According to the theory of Verneuil, a portion of the blastoderm is forced by pressure into the tissues, there remaining dormant for a while, afterward developing, thus producing by its growth an erratic development of normal tissue.

With reference to the period of life at which they were found, Pigné may be quoted. He analyzed 18 cases with the following results:

Five existed in virgins under 12 years old; 6 in children from six months to 2 years; 4 in the female fetus at term; 3 in fetuses cast off at eight months. On the other hand many cases are reported where they were found at puberty, middle life and old age. Potter reports, in examining postmortem the body of a woman 83 years old, found a similar growth, which though weighing five pounds and nine ounces, had occasioned no symptoms during life. It appears that up to the period of puberty the dermoid occurs oftener than any other form of ovarian tumor.

The contents of these cysts vary considerably in different cases. Sebaceous matter is always found in abundance. Hair is frequently found, short and stubby in some; in others again it is found quite long, as in the oft quoted case of Mundé where a switch of hair was removed measuring five and one-half feet. Again teeth are occasionally found in great numbers. Schnabel found more than one hundred attached to three pieces of bone removed from the walls of a large dermoid cyst in the case of a girl 13 years of age. Another case is reported by Autenrieth in which over three hundred teeth were removed. The presence of teeth constitutes one of the most remarkable feature of dermoid cysts. They may be attached to bone or cartilage within the cyst wall, while their crowns extend into its cavity. Sometimes their fangs are surrounded merely by connective tissue; while again the entire tooth may be entirely imbedded in the cyst wall, no portion showing except when exposed by an incision. Occasionally teeth are well formed and of a distinct type. They are usually, however, faulty in point of development and shape, the crown, fang,

enamel or cortical substance may be absent. Caries is claimed to have been found by some writers and denied by others, describing it simply as a phenomenon of wear and absorption. Meckel has shown by his investigations, which have been corroborated by the experience of others, that the teeth of dermoid cysts develop by successive crops, and in many other respects correspond to the normal dental structures. Thus, a preparation in Rokitansky's collection shows the crown of an atrophied tooth resting upon an underlying growing specimen, in a manner which forcibly recalls the natural eruption of the deciduous and permanent teeth. Salter claims, it has also been demonstrated that the teeth are supplied with nerves.

Baumgarten reports a remarkable case where the cyst, besides skin, hair and teeth, contained a body which contained an eye, with a species of convex cornea and epithelium like that of the retina. Nervous tissue, both gray and white, and resembling brain substances as well as nerve-fibers and plain muscular fibers have been repeatedly found in these cysts.

Both ovaries may be simultaneously affected. Out of 15 cases of dermoid cysts operated on by Mundé, in three cases both ovaries were similarly affected. In 31 cases of this disease observed by Doran, 7 were bilateral, while Olshausen found both ovaries affected in 4 out of 16 operations undertaken for removal of these growths. Ponpinel collected 44 cases in which both ovaries were affected. Olshausen collected 2275 cases of ovariotomies, and out of this number there were only 80 cases of dermoid cysts, making 3.5 per cent.

Bradford of Kentucky reports a successful removal of one of these tumors from a girl six and one-half years old. Also, Raemer of Berlin operated successfully on a child twenty months old, removing an ovarian dermoid as large as the patient's head. Collingworth reports the history of a woman in whom both ovaries were apparently involved by dermoids, who had given birth to twelve children and had had three miscarriages, the last three months before the removal of the growths.

The diagnosis of ovarian dermoids, prior to an incision on the operating table, is extremely difficult and in many cases absolutely impossible. The main distinguishing features are, their slow growth when small, greater mobility, sensation of resistance and absence of fluctuation. It should be remembered that true dermoids are invariably unilocular, however it very often happens there is associated with it an ordinary ovarian cyst, in which instance the diagnosis is made more difficult. Inflammation of the interior of the cyst, by the entrance into it of pyogenic microbes occasionally takes place, whereupon the products of the suppurative inflammation of the cyst wall, added to the contents of the cyst causes a rapid enlargement of the tumor. Pelvic abscesses have been noticed and their true dermoid character proven by the removal of long hair through the sinus of the supposed abscess in the posterior vaginal vault. In one case reported by Janvrin of New York, the patient's attention was first attracted by a bunch of hair protruding from the rectum. This, after repeated efforts, she pulled away. Some years later her abdomen began to enlarge, two ovarian tumors were diagnosed and both found to be dermoids on removal, one of which had perforated into the rectum.

Case 1.—Miss L. H., aged 31 years, well nourished, menstruation first appeared at the age of 15, irregular at first, frequently not appearing for four to six months at a time, last few years regular, complained of tumor noticed in abdomen for over a year, enlarging very slowly, which could now be distinctly detected above the brim of the pelvis. She had attacks of severe pain in the abdomen that would confine her to bed for several days at a time and necessitate a free administration of anodynes for relief. Menstruation was comparatively easy and natural. Examination revealed a tumor somewhat larger than a child's head at birth, springing from the left ovarian region with semi solid contents. Diagnosis as to nature of tumor was in doubt, owing to its slow growth, great amount of pain caused and the partial solid feel of contents; advised operation. A few weeks later, Feb. 14, 1895, operation was made and on opening the abdomen the peritoneum was found considerably congested, also the wall of the tumor thick and very vascular. The contents was so thick it would not flow through large size ovariotomy trocar. On partially withdrawing the trocar a small hair was seen protruding from the wound made in the tumor and a diagnosis of dermoid cyst became easy. The abdominal cavity was now protected with sterilized towels and sponges, and the opening in the sac enlarged and about two quarts of a fatty substance removed, filled with short stubby hair, some muscular tissue and a bone resembling a miniature inferior maxilla, also a switch of hair about the thicknes of a baby's wrist and two and one half feet in length. Accidentally some of the contents of the tumor escaped into the abdominal cavity. The pedicle was ligated, tumor removed and the abdominal cavity irrigated with sterilized salt solution, and the patient made a good recovery.

Case 2.—Miss M. K., aged 28 years, weighing 235 pounds, was examined April 24, 1896. She was suffering considerable pain in the abdomen, loss of appetite, chills and fever, temperature irregular 101 to 102.5 degrees. The abdomen was enormously distended by a fluctuating tumor which was enlarging very rapidly. The uterus was normal in size but driven low down in the pelvis. The tumor mass could be easily felt through the vagina. A diagnosis was made of suppurating ovarian cyst. The general condition of the patient was bad, being confined to bed most of her time for five weeks, which in connection with her fleshiness made operative proceedure extremely hazardous.

Operation was made May 14. A great many adhesions were encountered: many of them needed ligating before they could be divided. Over two gallons of gray matter, freely mixed with short hair and small balls of fat were removed with the trocar, the entire mass weighing twenty-two pounds. In closing the wound the peritoneum was sewed with catgut, the muscles with silver wire, the fat, fully four inches in thickness, by four tiers of continuous catgut, the skin also brought together with catgut subcutaneously.

The temperature at once dropped to normal and remained so until the sixth day, when there was a slight show of fever, which continued on the seventh, when we changed the dressings and the wound had united completely without any granulating points. On the eighth and ninth days there was still a temperature slowly increasing. Each day the dressings were changed and search made for a burrowieg abscess in the wound. Nothing could be discovered to explain this rise of temperature. On the tenth day the temperature was 102 degrees, and on examining by vagina a small tender mass in Douglas's cul-de-sac was found. The patient was at once placed under the anesthetic, the cul-de sac freely opened, three or four small dark clots removed, also a small amount of pus and freely irrigated with sterilized water and the cavity lightly packed with iodoform gauze. The temperature again dropped to normal and the patient made a good recovery with no further trouble, and today weighs more than she ever did.

In conclusion, it may be stated that the former teaching, that the escape of a part of the contents of a dermoid cyst into the abdominal cavity at the time of operation, would necessarily be followed by a fatal peritonitis, is probably not correct; a number of cases have been recorded where the accident occurred and patients made a prompt recovery. In the second case the presence of the tumor was not detected until suppuration set in, and it commenced to enlarge rapidly.

An Improved Decolorizing Fluid for Nissl's Method is made by mixing 40 c.c. oil of cajuput, 50 c.c. xylol, 50 c.c. creosote and 160 c.c. absolute alcohol. It penetrates the section readily, dissolves the celloidin, which always hinders precise differentiation on account of its avidity for the anilin stains, and absorbs the stain wherever it is not to remain.—De Gothard, *Semaine Méd.*, May 18.

A NEW COMBINATION CHART FOR THE EXAMINATION OF SCHOOL CHILDREN'S EYES AND EARS BY TEACHERS.

Read before the Western Ophthalmological, Otological, Laryngological and Rhinological Association, in Chicago, April 7, 1898.

BY FRANK ALLPORT, M.D.

PROFESSOR OF OPHTHALMOLOGY IN THE CHICAGO POLICLINIC, ETC.

CHICAGO, ILL.

As an adjunct to my method for the systematic examination of school children's eyes by teachers, I have prepared a special compound test card, which I submit. It is based upon the standard types of Snellen, and is called "A Visual and Aural Chart for Schools." Roman numerals are on one side of each line and Arabic on the other. As, notwithstanding frequent instruction and printed directions, I am frequently asked by teachers, "which is the proper line to test by at twenty feet?" I have had printed under the twenty-foot line the following words: "This line should be seen by a normal eye at 20 (xx) feet," which would seem to make the matter perfectly plain.

Under the last line on the card proper, is a half broken line, at which point the lower portion of the compound card should be severed from the upper portion. Just under this line are printed the words, "Please detach by breaking on this line." The card which is thus detached contains the teachers' instructions how to proceed with the tests. The upper or long card, containing Snellen's types is the testing card and should be hung on the wall when in use.

Upon the lower card of instructions is printed the following matter, most of which is already familiar to those who have used this method. Some additions have, however, been made, as for instance the instruction not to expose the card except when in use, the advice not to examine first grade children, the question as to the existence of strabismus, the questions for the development of ear diseases, with their frequent nose and throat obstructions, etc.

INSTRUCTIONS FOR THE EXAMINATION OF SCHOOL CHILDREN'S EYES AND EARS. FOR USE OF PRINCIPALS, TEACHERS, ETC.

Do not expose the card except when in use, as familiarity with its face leads children to learn the letters "by heart."

First grade children need not be examined.

The examination should be made privately and singly, in a room apart from the general school session.

Ascertain if the pupil habitually suffers from inflamed lids or eyes.

Cuildren wearing glasses should be tested with such glasses properly adjusted on the face.

Place a card of Snellen's Test Types on the wall in a good light; do not allow the face of the card to be covered with glass.

The line marked 20 (xx) should be seen at twenty feet, therefore place the pupil twenty feet from the card.

Each eye should be examined separately.

Hold a card over one eye while the other is being examined. Do not press upon the covered eye, as the pressure might induce an incorrect examination.

Have the pupil begin at the top of the test card and read aloud down as far as he can, first with one eye and then with the other.

If the pupil does not habitually suffer from inflamed lids or eyes, and can read a *majority* of the xx (20) test type with each eye, and does not, upon inquiry, complain of *habitually* tired and painful eyes and headache after study, his eyes may be considered satisfactory. But if he habitually suffers from inflamed lids or eyes, or can not read a *majority* of the xx (20) test type with *both* eyes, or habitually complains of tired and painful eyes or headache after study, a card of information should be sent to the parent or guardian.

FACTS TO BE ASCERTAINED.

EYES.

1. Does the pupil habitually suffer from inflamed lids or eyes?
2. Does the pupil fail to read a majority of the letters in the number xx (20) line of the Snellen's Test Types, with either eye?
3. Do the eyes and head habitually grow weary and painful after study?
4. Is the pupil probably "cross-eyed?"

EARS

5. Does the pupil complain of earache in either ear?
6. Does matter (pus) or a foul odor proceed from either ear?
7. Does the pupil fail to hear an ordinary voice at twenty feet in a quiet room?
8. Does the pupil fail to hear the tick of a good-sized watch at three feet with either ear in a quiet room?
9. Does the pupil fail to breathe properly through either nostril?
10. Is the pupil an habitual "mouth breather?"

If an affirmative answer is found to *any* of these propositions, the pupil should be given a card or letter of warning to be handed to the parent, which should read something like this:

Dear Sir:

After due consideration, it is believed that your child has some Eye——Ear* disease, for which an Eye——Ear* Doctor of recognized standing should be consulted. If you feel unable to consult one at his office, a dispensary will do the work free of charge.

It is earnestly requested that this matter be not neglected, as children with Eye——Ear* diseases can not attain the best results in school.

Respectfully,

. . . . . .

Principal . . . . . School.

*Either the word "Eye" or "Ear" may here be crossed out, as may be appropriate for the case. If the pupil has presumably *both* and an eye *and* Ear disease, *both* words may be left, and the space between the words "Eye" and "Ear" should be filled in with the word "and."

If school authorities desire to have these cards of warning printed (which of course facilitates the work), the names, addresses and office hours of the various free dispensaries may be printed upon the backs of the cards, if it is so desired. If this is done the names of *all* the reputable Dispensaries in the city should of course be included. Teachers should not exert their influence in favor of any particular Eye or Ear Surgeon or Dispensary.

It will be observed that these cards are non-obligatory in their nature. They do not require anything of the parent, who is at perfect liberty to take notice of the warning card or not, as he sees fit. They simply warn the parent that a probable Eye or Ear disease exists, thus placing the responsibility upon the parent.

Principals and teachers are urged to impress upon pupils and parents the necessity for consulting reputable Eye and Ear Surgeons and not *unprofessional tradespeople.*

It will be noticed that the language is plain and the instructions simple, in order that they may be easily comprehended by teachers and the laity into whose hands the cards will naturally fall.

The "facts to be ascertained" have been so worded that an affirmative answer to any one of them will indicate that the pupil needs a warning card to take to the parent.

I have several purposes in view in producing this chart. My original method for conducting these tests was to have an oculist appointed by the board of education, who should superintend the tests, collect data, make reports, etc. The examinations were to be made by principals and teachers, and pupils found defective should have their names, conditions, etc., enrolled upon what is called the "statistical blanks," upon which, after due time, is to be written the results of treatment upon the eyes, health and general conduct of the pupil. These blanks are handed to the superintendent and board oculist, who keep them on file and reports on their findings to the board of education.

This is the plan I have advocated and still advocate, but boards of education are not always amenable to argument, and their objections take many forms. Some will not hear to the plan at all; some are willing to have an oculist instruct the principals as to the workings of the plan, but wish him to have no further connection with the schools; some adopt the plan, but will not ask the principals to perform the extra labor of making out the "statistical blanks," and some will not allow the names of the dispensaries printed on the backs of the warning cards, etc. The combination card which I now propose harmonizes with most of the objections, and I think can be adopted under most circumstances.

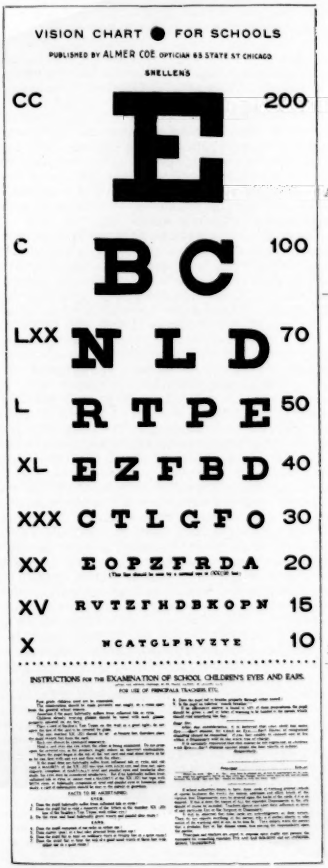
Many teachers are interested in this work, and are constantly inquiring how they may do it in places where the board has taken no official action along these lines. They can purchase one of these combination cards containing both the test types and instructions, and proceed with the work in their room or school. To this there can certainly be no objection, as the tests are absolutely harmless in every particular.

In case a board does not wish to burden its principals with statistical reports, but wishes the work done in other particulars, these cards may be purchased by the board, which will cover the entire expense, excepting the warning cards.

In the tests in the Chicago schools, which the Chicago Board of Education has requested me to super-

intend, the principals will not be called upon to render statistical reports, therefore my new combination card will be used. They will, however, be required to let me know how many children were examined, how many were found defective, how many they know to have been benefited as a result of the tests, and what are their general ideas as to the usefulness, etc., of the plan.

I do not in any sense depart from the original and more systematic plan which I have so many times recommended, but in case the more accurate method can not be used, this one will, I believe, render satisfactory service, as what we really wish to achieve is the benefit to the coming generation and not the compilation of statistics.



A. This section of the card should hang on the wall.

B. The two sections of the card should be separated or broken apart on this line.

C. This section of the card contains printed instructions to teachers, and should be kept for their personal use.

92 State Street.

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

Regular Meeting held May 13, 1898.

Dr. DANIEL R. BROWER in the chair.

Drs. Wm. L. Baum, James G. Kiernan, G. Frank Lydston, Harold N. Moyer and Eugene S. Talbot were elected Directors for 1898-9.

Dr. REUBEN PETERSON read an inaugural thesis entitled

PERIPHERAL NERVE TRANSPLANTATION.

He reported a case in which the sciatics of a dog were transplanted successfully between the severed ends of the median and ulnar nerves of a man. At the outset, the author stated that the operation of implanting between the resected ends of a peripheral nerve a segment of a nerve from a recently amputated limb, or from one of the lower animals, was comparatively rare. In the majority of cases of accidental impairment of the conductility of a peripheral nerve, the proximal and distal fragments could be brought together and directly sutured. Obviously this was the ideal method, and that oftentimes it was markedly successful might be seen from the reported cases of apparent primary union occurring after immediate suturing of divided nerves. In a certain proportion of cases so much of the nerve substance would be removed as to preclude all chance of a direct union of the divided ends of the nerve trunk. This would happen more often during the removal of tumors involving a peripheral nerve. The same condition might result from an extensive crush of the nerve substance, necessitating the resection of considerable portions of the nerve before healthy tissue was reached, or the injured nerve might be so imbedded in dense connective tissue as to render a dissection at the point of lesion exceedingly difficult and of doubtful utility. Under these conditions the surgeon must decide what method of bridging over the gap in the nerve trunk and restoring its conductility should be employed. His choice would naturally depend largely upon the recorded results of other operators as well as actual work on the human subject.

To intelligently observe, treat and record a case of nerve section required a knowledge of nerve physiology and histology, rarely possessed by the average surgeon. It was only by the combined efforts of specialists in these departments that such cases of nerve surgery could be worked out to the greatest advantage. The author then reports his case in detail.

A microscopic examination of the segments of median and ulnar nerves removed at the time of operation was made by Dr. G. Carl Huber of Ann Arbor, Mich.

The essayist then passed on to the consideration of the changes in sensation and motion following the operation in the case reported by him. The first return of sensation in a previously anesthetic area was noted within twenty four hours after the operation, sensation being tested on the thumb by a pin. Tests made in this way were not open to the objection of those made with a blunt object, for, as pointed out by Létiévant, impact against the anesthetic area might be carried to sound papillæ and carried upward by other nerves. This rapid return of sensation was not an uncommon occurrence, as recorded cases of nerve section and suture would reveal. As it was generally conceded that the transplanted nerve segment degenerates, as does any other resected nerve, only more rapidly, it was contrary to all biologic law to suppose that sensation was so quickly conveyed over this bridge of foreign tissue. Yet the rapid return of sensation was advanced as an argument by those who claim that the fibers originate in the peripheral end from the sheath of Schwann.

The author then quotes Kennedy with reference to the rapid return of sensation after operation. He also reviews extensively and exhaustively the literature of the subject, giving an epitome of cases that have been reported.

General conclusions.—1. Transplantation of a peripheral nerve segment to bridge over a gap between the two ends of a resected nerve is a legitimate surgical procedure.

2. Under favorable conditions at least partial, and at times complete, restoration of sensation and motion may be expected to follow the operation.

3. Regeneration of the degenerated peripheral end is due to down growths from the axis cylinders of the central end.

4. From the slowness of this process, the longer the time after the operation the more favorable will be the results.

5. Sensation may return very early after operation, and as a rule precedes return of motion.

6. This rapid return of sensation is not due to down growth of axis cylinders or to conductivity of the transplanted fragment, but must be explained by collateral nerve supply.

7. In many cases very early return of motion, after transplantation, may be due to vicarious movements of other muscles than those formerly paralyzed, and not to a regeneration of the latter's nerve supply.

NERVE IMPLANTATION.

Dr. G. CARL HUBER of Ann Arbor, Mich.—I am proud to be able to make some remarks on this interesting case which has been so well presented by the essayist, Dr. Peterson. I became aware of this case after I had completed some experimental work on the repair of nerves after loss of nerve substance, and welcomed, therefore, the opportunity to test some of the conclusions reached, in a clinical case. The question of the repair of an injured nerve is one that has been frequently discussed, both by the experimenter and the surgeon. Opinions differ, however, even yet, as to the manner in which such repair takes place. It may not be amiss, therefore, to review briefly some of my work touching on this question, which has been done in the past ten years. As Dr. Peterson has stated, the views of the histologic process of nerve regeneration may be divided into two groups. One set of investigators, among whom may be mentioned Büngner, Galeotti and Levi, Kennedy, Ziegler and Wieting, contend for a regeneration of the peripheral segment of a divided nerve from the proliferated nuclei of the old, the degenerated nerve fibers. These cells are looked upon as cells having the value of neuroblasts; embryonic nerve cells. Another set of investigators, among whom may be classed Howell and Huber, Stroebe, Notthaft and Kolster, states that the regeneration of the peripheral end of a divided nerve is through new axis cylinders, which bud from the central, the undegenerated axis cylinders, and grow into the degenerated portion of the nerve. The proliferated nuclei of the sheath of Schwann are, according to this view, not looked upon as neuroblasts, but as cells, probably of neuroblastic origin, which furnish, wholly or in part, the accessory sheaths to the new axis cylinders. The discontinuous origin of the axis cylinder in a regenerating nerve was strongly defended by Büngner, whose apparently careful work and numerous excellent illustrations did much to bring before investigators the interpretation of the question under consideration. Büngner's observations may be summarized as follows: He points out that simultaneously with the breaking down of the medullary sheath in a degenerating nerve, there is observed a proliferation, by mitotic cell division, of the nuclei of the sheath of Schwann, and an increase of the protoplasm around these nuclei. The proliferated nuclei become arranged in rows, and the protoplasm begins to show a longitudinal striation. In this striation the author recognizes the first appearance of the fibrillæ of the new axis cylinders. These striated bands of protoplasm, formed in the old sheaths, become separated from the remaining protoplasm of the old fibers to form the new nerve fibers. This development of new fibers begins near the wound. They are less fully developed as one proceeds from the injury to the periphery. According to Büngner, the function of forming these new nerve fibers belongs to the proliferated nuclei of the sheath of Schwann, which he designates as neuroblasts, and regards as nerve cells. The work of Galeotti and Levi may here receive brief mention, as their observations pertain to results obtained on lizards in which the tails were resected and the regeneration of the nerves and motor end organs observed. They found that at the end of the cut nerves, spindle shaped cells are to be observed, which they traced to the proliferating cells of the sheath of Schwann. These cells are rich in protoplasm. They become arranged in rows, and the protoplasm fuses to form bands. In the bands, sometimes in the cells before fusing, the beginnings of the new axis cylinders may be recognized. Ziegler's observations pertaining to the regeneration of nerves corroborate in the main those made by Büngner. He recognizes the importance of the proliferated nuclei of the sheath of Schwann in the regeneration of nerves, and also observed the striated protoplasm in the old sheaths, from which the new axis cylinders were said to be developed. These new axis cylinders are, according to Ziegler, formed near the wound, in the first place, it would seem, not in connection with the old fibers. This connection is said to be established through a nucleated, protoplasmic plug, which appears at the end of the central fibers. Wieting's work appeared from the Pathological Institute at Marburg, where Büngner's investigations were made. Wieting confirms Büngner's observations in full, emphasizing the following points: On the third day, he states, it may be observed that in the undegenerated portion of the central portion of the divided nerve, the axis cylinders terminate in a band of protoplasm, found in the degenerated portion of the central segment. At the point of lesion, cells rich in protoplasm wander out from both the cut ends of the nerve, and arrange themselves in rows between the divided nerve fibers. In the peripheral portion of the divided nerve, bands of protoplasm are formed in the old fibers.

There is now found in the entire degenerated portion of the injured nerve a mass of protoplasm, out of which are differentiated the new nerve fibers. On the fourth day, occasionally on the third day, there may be observed in the protoplasmic contents of the old sheaths, very fine fibrillæ, which always appear first in that portion of the protoplasm joined to the old axis cylinders. From these and similar observations Wieting is led to believe that as soon as a stimulus is received from the old axis cylinders, the neuroblasts lose their identity, flow together, and the fibrillæ begin to appear in the protoplasm. These fibrillæ are not to be looked upon as an outgrowth of the old axis cylinders, but are developed in the protoplasm derived from the proliferated nuclei of the sheath of Schwann, and this, under the stimulus of the old axis cylinders. These fibrillated bands of protoplasm develop into the new axis cylinders, the medullary sheath developing from the remaining protoplasmic contents of the old sheath, which surrounds the fibrillated portion. The new axis cylinders, medullary sheath and sheath of Schwann are, according to this view, formed from the proliferated nuclei and protoplasm of the sheath of Schwann, of the old, the degenerated fibers, as the result of a stimulus which comes from the central, the undegenerated portion of the nerve. Kennedy describes observations made on four surgical cases. He finds that the new nerve fibers originate in the peripheral as well as the central segment. The new fibers originate from cells within the sheath of Schwann. In the development of the young fibers, the central portion of the primitive protoplasmic thread forms an axis cylinder, and the myelin sheath is deposited in the surrounding protoplasmic zone, which latter remains along with the nucleus as the neuroblastic element of the interannular segment. The formation of new fibers in the peripheral segment occurs, although this is not connected with the central end, but maturation of the fibers is not complete while separation of the ends lasts.

Before discussing the results of investigators who contend for a discontinuous origin of the axis cylinder in the peripheral segment of a regenerating injured nerve, the position of such investigators as believe in an outgrowth of the old axis cylinders into the peripheral portion of a divided nerve, may be briefly stated. Stroebe may here be cited as being the first of the more recent investigators in this field to formulate this view clearly. His observations pertain largely to experiments on rabbits, in which the great auricular nerve was injured by compression. Seven days after such compression, in preparations stained after his anilin blue-saffranin method, young axis cylinders were seen in connection with the central and regenerated axis cylinders; these were traced into the connective tissue, which was developing at the point of injury. Such new axis cylinders, were, in various experiments, followed step for step into the peripheral portion of the nerve, where they were found within or between the old fibers. The regeneration of a divided nerve begins, therefore, at the peripheral end of the central, the undegenerate nerve fibers, as small axis-cylinder buds, which grow to the periphery. The protoplasm and nuclei in the degenerated fibers playing only a passive part in regeneration, in so far as they may, to some extent, at least, guide the down-growing fibers. According to Stroebe, the down-growing axis cylinders possess a thin medullary sheath from their first appearance, showing, however, no nodes of Ranvier, and no segments of Schmidt or Lautermann. These appear about the fifth week, by which time, in the rabbit at least, the new nerve fibers are nearly fully developed. The nuclei of the sheath of Schwann of the degenerated fibers form, according to Stroebe, the sheath of Schwann of the new fibers. Notthaft's observations were, in the main, similar to those quoted from Stroebe. He defends the down-growth of the axis cylinder as the most important phenomena in the regeneration of an injured nerve, and gives diagrams to show the rate of this down-growth. He does not, however, give so clear a demonstration as does Stroebe, of the budding of the new axis cylinders from the central, undegenerated axis cylinders, and finds the new fibers at first non-medullated. The observations made by Professor Howell and myself, are usually interpreted as showing a down growth of the axis cylinders from the central end, although this was not so clearly demonstrated by us as by Stroebe. Kennedy and Wieting find in these observations support for a discontinuous origin of the new axis cylinders in the peripheral nerve. We described as the first stage in the regeneration of the peripheral fibers, bands or cords of protoplasm containing nuclei, which resembled developing nerve-fibers. These fibers, adopting the nomenclature of Neumann, were spoken of as "embryonic fibers." We were not able to make out an axis cylinder nor a medullary sheath in these fibers, but simply "membranous

sheaths filled with a protoplasmic material in which are numerous nuclei occurring at more or less regular intervals." These fibers seemed to show a low degree of irritability, and seemed more readily stimulated by mechanical stimuli than by electrical. Kennedy regards the fibers, described by us as "embryonic fibers," as nerve fibers, because "when the peripheral segment which contained only such fibers was mechanically irritated, a low degree of irritability and conductivity was found." Stroebe does not regard our embryonic fibers as nerve fibers (neither did we), but as completely degenerated nerves. He is of the opinion that in such cases, where a mechanical or electrical stimulus elicited a response in a portion of the peripheral segment, where only embryonic fibers were found, our histologic methods were insufficient to detect the new axis cylinders which may have been present. I am, from observations made in later work, inclined to accept Stroebe's interpretation of our results. From the investigations of His, on the development of nerves, we have learned that the nerve fibers, the embryo, which resemble the embryonic fibers described by us, thus the name, possess an axis cylinder, in fact, are the axis cylinder branches of nerve cells. Then it must be remembered, a point which Kennedy and Wieting seem to have overlooked, that in our physiologic experiments, irritability in a divided and sutured nerve, or in a nerve crushed with a ligature, did not return before the twenty-first day, and then only near the wound. From that time irritability proceeded centrifugally, and was never well marked until such a time as we were able to find axis cylinders at the seat of stimulation. In the experiments of Büngner and Wieting, the striated protoplasm, in which they see the beginning of the new axis cylinders, appeared as early as the fourth and fifth day after injury to the nerve. As far as I am aware, the irritability or conductivity of this striated protoplasm was not tested by Büngner nor Wieting. In Stroebe's experiments the down-growing axis cylinders reached the wound about the seventh day, and only at a later time were they found in the more peripheral portion of the degenerated nerve. My own experiments on the regeneration of nerves after loss of substance, in which segments of a nerve, a bone tube, or a catgut bundle, were implanted, seem to me of importance in this connection. In all these experiments I was forced to the conclusion that there was a down-growth of axis cylinders from the central portion of the divided nerve, and that it depended entirely on the mechanical conditions, as to whether the down-growing axis cylinders reached the peripheral portion of the divided nerve or not. It seems to me that the experiments of bone tube and catgut implantation were of especial importance in throwing light on this question. In these experiments it seemed to me clearly proven that the new axis cylinders came from the central end, in no instance were there found any axis cylinders in the peripheral portion of the nerve, until the down-growing axis cylinders had reached the peripheral segment. In no instance was there observed any migration of the proliferated nuclei of the sheath of Schwann, either from the peripheral or central end of the resected nerve, which might in any way be regarded as the *anlage* for new axis cylinders, or contribute to the formation of bands of protoplasm in which an axis cylinder differentiation might occur.

Experimental work teaches that an attempt at regeneration occurs after every injury to a peripheral nerve, and that regeneration of the peripheral segment follows if the mechanical conditions for a down growth of axis cylinder buds from the central end are favorable. Wieting asks this question: "How can such delicate fibers as the new axis cylinders grow through connective tissue, and how can they withstand compression when this connective tissue organizes and contracts?" To this we may answer: "The new axis cylinders grow through embryonic connective tissue, as Stroebe and I have shown. They are hindered in their down-growth, and many of them are deflected from their course, and no doubt many of these new fibers may degenerate again if much connective tissue is formed between the ends of the divided nerve, as, for instance, when a divided nerve is not sutured, or when during a nerve suture, the coaptation of the ends is not accurate. It seems to me this is shown after every nerve injury, especially where there is a loss of nerve substance. The nerve bulb found at the central end of a divided nerve signifies an aborted attempt at nerve repair. In these cases the new axis cylinders grow toward the periphery, but are prevented in their further development by the organization of the connective tissue. It is for this reason that it is necessary to suture carefully after nerve injury, to vivify the ends of the nerve stumps in secondary suture and to use some mechanical device which will protect the down-growing axis cylinders, as will absorb slowly, leaving paths of least resistance in the connective tissue between the divided ends of the nerve, along which the down-growing axis cylinders may pass in their downward growth. The implantation of a nerve segment, in case an ordinary secondary nerve suture could not be made, was suggested in the case presented by Dr. Peterson, because in the experimental work the implantation of a piece of nerve between the resected ends of an injured nerve seemed to offer the most suitable mechanical conditions for the down-growing axis cylinders. The fibers of the implanted nerve degenerate into fibers consisting of the old sheaths of Schwann, containing nucleated bands of protoplasm, through which, or between which, the down growing axis cylinders may grow protected, sufficiently at least, from the surrounding connective tissue. This, it seems to me, is an operation that is demanded in every case where an ordinary primary or secondary nerve suture can not be made, owing to the separation of the divided ends of the injured nerve. It is an operation justified by experimental observation, and I may here be allowed the expression of the opinion, and this without in the least attempting to throw discredit on clinical observation, that in this and similar cases experimental observations, histologic, physiologic and pathologic, are more likely to a correct understanding of the question than are observations on clinical cases. The clinician can not expose the nerve at his pleasure, make physiologic tests, and then remove the nerve and study it histologically as can the experimenter. Kennedy, in his cases, was able to remove only a small portion of the nerves operated upon by him.

And I venture to say, that in these same cases, a study of the peripheral portion of the injured nerve would not have revealed new nerve fibers. If nerve fibers had been found in the peripheral portion of the nerve, an operation would not have been needed. The case reported by Dr. Peterson is one I feel sure Kennedy would have interpreted as showing a development of new fibers in the peripheral portion of the divided nerves. As you have seen from the figures thrown on the screen, cross sections of the central end of the peripheral portion of the divided median, showed a few very small medullated fibers. This might be interpreted as showing a development of nerve fibers in the peripheral end, as the distance between the central and peripheral portions of the divided median, measuring about 1 cm., was bridged by connective tissue. In longitudinal sections passing through the peripheral portion of the central part of the median, the intercalary connective tissue and a portion of the central end of the peripheral part of the divided median, small nerve fibers with thin medullary sheaths could be traced from the central to the peripheral part of the median, through the intercalary connective tissue, showing, it seems to me, a down-growth of new nerve fibers from the central end. How far down in the median such new nerve fibers extended we can not say, probably only a short distance. It seems unfortunate, the other features having been worked up so thoroughly and scientifically by Dr. Peterson, that the fingers sent him from Canada were not fixed in such a way that methods used in histology for bringing to view axis cylinders or the medullary sheath could not be used. This would have been of great use in this case from the standpoint of the scientist.

In closing, I can only express my thanks to Dr. Peterson for the opportunity to observe this case, and the Academy for giving me privilege to make these remarks. Your interest in the essay and in the remarks which followed, shows your appreciation of the subject under discussion.

Dr. KIERNAN—What are the nerve elements which occur in the extremities of a part, say the toes or fingers, after amputation; and are there new nerve fibers?

Dr. HUBER—A nerve bulb is formed at the end of the cut nerves and there are new nerve fibers in every bulb. These new nerve fibers grow out from the old nerve. The nerve bulb consists practically of new nerve fibers and connective tissue.

Dr. S. BROWN—I would like to know if this process is not a reduplication of the embryonic development of nerve fibers?

Dr. HUBER—Exactly. It seems to me that there is no doubt that the new nerve fibers grow out as they do in the embryo. This applies more particularly to the axis cylinder. The medullary sheath is of a secondary consideration to the surgeon. If he gets axis cylinder regeneration he does not care so much for the medullary sheath. The medullary sheath, I am inclined to think, is developed from the axis cylinder; the connective tissue part of the nerve is the sheath of Schwann, or the neurolemma.

Dr. TALBOT—Is the nerve tissue admittedly epiblastic in its origin?

Dr. HUBER—It is. The neuron is developed from an epiblastic cell; the supporting tissue of the brain and cord, that is, the neuroglia cells are also of epiblastic origin. Everything that belongs to the neuron proper, and neuroglia tissue is epiblastic in origin, and in no way mesoblastic.

Dr. FERGUSON—Is it possible to cut a nerve and prevent the formation of a nerve bulb?

Dr. HUBER—I do not think that thing can be done. You may possibly, by trimming off the end, prevent it to some extent, but I believe every nerve fiber that is cut away will attempt to regenerate. A nerve bulb is an attempt at regeneration; the nerve fibers try to grow out, no matter how or where a nerve is injured.

Dr. TALBOT—In France many years ago, it was customary to remove a sound tooth from one person and transplant the same in place of a decayed tooth removed in another person. Such teeth often healed without bleaching, which shows that the nerve fibers in the implanted tooth at once became united with the nerve fibers in the jaw, as otherwise the tooth would have changed color. I would also mention the observation that when such teeth were touched with a hot iron pain was felt.

Dr. G. CARL HUBER (closing remarks)—The experimental work of Schiff on "The Replantation of Teeth" goes to show that when a replanted or transplanted tooth makes union this is by means of the alveolar periosteum primarily. He also points out that the pulp in a transplanted tooth always undergoes necrosis. It may regenerate later on, but as I remember, this takes place quite slowly.

Dr. TALBOT—Yes.

Dr. JAMES G. KIERNAN—It seems to me, that there are three subjects which should be discussed here. Not merely the neurologic and pathologic question, but also the surgical. Before a neurologist takes up the question it seems to me better that a surgeon describe the actual results in these cases. Nerve surgery has assumed considerable prominence during the last ten years. At this time the results have not quite reached the standard anticipated. That difference could, with all deference to Dr. Huber's explanation, be accounted for by a difference between the regenerative powers of the animal experimented on and the human being. Take, for example, the work that has been done on bone-tubes. Nerve regenerative power is rarely exercised; as a rule, only the connective tissue part reproduces itself and not the nerve tissue proper.

With regard to the point which Dr. Huber made in which I was very much interested, and which to my mind was to a certain extent supported by a few results in connection with amputation neuralgia and amputation hallucinations, I should be inclined to favor rather strongly surgery alone, the line which Dr. Peterson has indicated. At the same time, the question comes right to my mind, whether with this nerve regeneration we do not have a connective tissue proliferation to correspond or even a greater one. Until that question is settled, one of the practical points, from a neuro-surgical standpoint, remains unsettled. The nerve regeneration in replaced cut-off fingers deserves study from this standpoint.

Dr. A. H. FERGUSON—I should like to draw the attention of the members to the fact that this case of Dr. Peterson was not one of nerve surgery alone; other structures were injured which must be taken into consideration. I refer to the return of motion, and with regard to atrophy or trophic changes that were observed in that hand. The vessels were cut in front of the wrist, all except the radial artery; this would account for some of the congestion, for some of the coldness in the hand, and it might also account in part for a number of other changes.

Nerve transplantation being the subject of the evening, I will simply read to you a report of my own case, which occurred five years ago, but which report I am sorry to say is not as complete as it might be, nor as replete with material as that of Dr. Peterson, but I think has a scientific value.

Miss M., age 18 years, presented herself at my office on May 3, 1893, with a tumor situated in the course of the median nerve about an inch and a half above the left wrist joint. It was painful to the touch, and pain was referred to the peripheral distribution of the nerve, especially in the index and middle fingers. Her suffering was gradually increasing in severity, and night pains were experienced. The growth was first noticed in February, 1893. Changes in the weather appeared to bring on pains in the hand. On May 9, 1893, assisted by Dr. Versailles, I removed the tumor under cocain anesthesia, through a lateral semilunar skin incision. It was found necessary to inject cocain into the nerve above the tumor before manipulation of it could be tolerated. By blunt dissection an effort was made to separate the nerve-fibers from the growth, but without much success. The tumor was almost round in shape. It measured an inch in its longest diameter, which was parallel to the course of the nerve. The nerve was severed about an eighth of an inch above and below the tumor. The distance between the ends of the nerve was bridged over with four strands of chromic catgut (No. 1, Seabury & Johnson), which brought the ends closer together than an inch. The wound was closed and dressed. A McNaughton splint was applied, putting the forearm, wrist and palm at rest, the fingers flexing over the end of the splint. The case was not seen by me for a week, when the dressings were removed, wound found healed, the skin sutures removed and the limb dressed as before. There was no return of sensation, and motion was not attempted. At the end of another week all dressings were removed and left off, and gentle friction and passive motion advised. She complained of a soreness in her hand. During the following three or four weeks the hand was weak and numb. A rubber ball was given her to exercise the fingers. Some days the finger and thumb appeared to be stronger than previously, and again they appeared to lose the strength gained. At the end of six weeks there was practically no return of motor or sensory function. The grasp was imperfect, and she could not feel the prick of a pin over the outer half of the palm, the palmar surface of the thumb, index and middle fingers. There was some sensation on the radial side of the ring finger. The tips of the thumb, index and middle fingers could be pricked with a pin without being felt. The tip of the ring finger was sensitive. Sensation was also absent on the dorsal aspect of the thumb, and two adjacent fingers immediately below the nails.

Three months after the operation (Aug. 12, 1893), the ball of the thumb was noticed to have atrophied. The grasp had not improved. The anesthesia on the palmar surface persisted, but she claimed that on being pricked several times in quick succession on the dorsal aspect of the thumb and fingers, to feel that something had been done. Return of sensation in these regions is put down as doubtful. Transplantation of a nerve from an animal was determined and carried out August 12, 1893. About an inch and a third was removed from the left sciatic nerve of a pup and transplanted into her arm in the following manner: Chloroform was administered to both. The old semilunar scar was followed and removed from her arm, a flap raised, the catgut was absorbed, dense scar tissue extended between the ends of the nerve, the proximal end somewhat bulbous, the distal about normal in size, but somewhat fibrous, the ends were vivified by transverse incisions and the nerve from the dog sutured in place with fine silk. I saw her again on the third day. She saluted me with the assertion that she could feel with all her fingers except the middle one, which I verified by pricking them with a pin. I saw her again on the eighth day. She now complained of soreness and hyperesthesia in the distribution of the nerve to the hand. From this time on the sensation of the limb became more and more normal. Motion improved gradually, but was vascillating and painful. Creeping sensations ran down the fingers occasionally. She was then under my observation for a month, at the end of which time she had a good useful hand, having been restored to about two-thirds of its function. I might say that passive motion was commenced about the end of this second week. She used to rub it a great deal with oils of different kinds, in which she was encouraged. Two years afterward (1895), I saw her for a few minutes on the street. She said her hand was still lame, but useful, and did not pain her. She could feel anything larger than a fine needle and thread or horse hair. I noticed that the atrophy persisted, and that the grasp of the hand was not fully restored. When Dr. Kiernan asked me to discuss Dr. Peterson's paper, I at once wrote to this lady, and the following reply was made to a series of questions I wished her to answer, and received yesterday: "I will just answer all your questions by saying that my hand is, may be, a little stronger than when you saw me last in Winnipeg. The feeling is about the same, and my hand near the thumb is still wasted." I do not understand how the sensation returns so rapidly unless the continuity of the median has something to do with it when we transplant a nerve. If it were due to the impressions sent along other tracks those impressions should have existed primarily immediately after the first injury.

Dr. E. S. TALBOT—Transplantation of nerve tissue is not new to the dental surgeon. Even one hundred years ago, the French nobility had their decayed teeth removed and healthy teeth of the peasants substituted. When these teeth were extracted, the nerve tissues as well as blood vessels were severed at the apex, but sensation and vitality were eventually restored.

This is true at the present day. It is not an uncommon thing for physicians and dentists to replace teeth that have been knocked out. It is impossible to say whether they unite or not. I can only say that discoloration of the tooth and alveolar abscess do not occur, which would be the case if union did not take take place. By the common practice in such cases of placing a heated instrument upon the tooth, the patient responds to sensation. These teeth remain in a healthy condition in many cases through life.

Dr. W. X. SUDDUTH—This is a subject that has a great deal of interest for me, because I can speak from two standpoints, that of a scientific observer and also as a patient. In the fall of 1878, as some of you know, I was in Wyoming Territory. I had been interested in the cattle business since 1873, and finding that I was unable to secure as good a market as I wanted I established meat markets in the northern part of Colorado, and had my agents at different points attending to the sale of meat that was taken to them. Being called to a mining camp in northern Colorado, and my agent there anxious to take advantage of the occasion to take a vacation (which means to go on a drunk), I had to take charge of the market, and having occasion to cut a rib-roast, I cut it through with a knife and started to use the cleaver, and in doing so held the ribs apart with my left hand, but in using the cleaver the blade went too far and struck me right on the upper portion of the wrist, cutting it to the bone, severing blood vessels, ulnar and median nerves, and as a result, having no means of attending it antiseptically, antisepsis being practically unknown in those days, a cicatrix formed between the cut ends, followed by paralysis of the abductor muscles with loss of sensation and loss of the use of the thumb for any fine manipulations. This lasted for several years, and in the meantime I returned to college work, experimental and embryologic, engaging my attention especially to nerve tissues, and came to the conclusion from experiments made on rabbits that the cicatricial tissue prevented the union of the nerve ends, as Dr. Huber has shown you, and in 1884 I spoke to Dr. Garretson, who was then living in Philadelphia, but since deceased, and he cut down and removed the cicatricial tissue and brought the cut ends of the nerves together by the only process we then knew (buried sutures), the wound healing by first intention. Following the operation sensation did not return at once, possibly by reason of lack of adjustment of the ends, as the operation was according to our knowledge of today, somewhat crude. Still sensation gradually returned and has been steadily improving till the present time. This case has never been published, because I have not discontinued my observations as yet. There is no question but what, in this particular case, sensation improved from the distal ends of the central nerve, that is, from the upper portion; it was not through a collateral division, because if it had in the six years after it occurred before operation it would have been restored. The anastomosis came from the union of the ends of the nerve and gradually the thumb has been restored to its full rotundency and the strength of the muscle improved and now all that remains is a certain tingling sensation when it is touched, and which is gradually getting better and better all the time.

Dr. HUBER—Just the thumb alone lost sensation?

Dr. SUDDUTH—Yes. This whole question is one of vital interest to the embryologist, as to whether this regeneration of nerve tissue is through an inside extension of the neuroblast from the root nerve or whether there is a transmission or transformation of the embryonic connective tissue into nerve tissue. My observations made upon peripheral nerve endings, although not done with the later methods, the Weigert method being the one used at that time, still we got fair results. Perhaps the best work I have done along that line was in the development of peripheral nerves in the pulps of the teeth. Prior to the eruption of the teeth no nerve-fibers are to be observed at all, and the apical foramen of the tooth is fairly well developed, and yet at a certain point, the development of these peripheral nerve-fibers seems to come from the mesoblastic tissue of the pulp itself.

The point raised by Dr. Talbot as to the restoration of sense of feeling in the implanted or transplanted tooth is a good one clinically, but so far as I know no scientific work has been done to demonstrate the regeneration of these fibers. That there is a return of sensation there is no doubt, but that leads up to the subject of redevelopment of excised nerve. I have assisted in and performed operations of excision of the inferior dental nerve for neuralgia of the face, and we took the precaution to insert wooden plugs, also other kinds, into the dental foramen.

Dr. HUBER—You have a bone-tube there?

Dr. SUDDUTH—Yes. And in our cases neuralgia returned, so that we had a very positive demonstration of redevelopment of the nerve-fibers, even where the nerve was excised. In those cases invariably the restoration of the excised portion, is from the trunk end of the nerve, not from the peripheral portion, except a plug was inserted to prevent it, at the upper end of the canal. This question is one fraught with great interest, and one that can not be discussed to any extent in the time that is allotted.

Permit me to express my thanks and appreciation to Doctors Peterson and Huber for their work and contributions to the Academy.

Dr. S. A. MATTHEWS—In regard to the quick return of sensation to the part rendered anesthetic by division of its nerve-supply, after the peripheral and proximal ends of the cut nerves are reunited, physiologic experiments suggest the following explanation, which at present can only be considered a suggestion: We have quite good reason to think that sensation is not wholly supplied to a part by one nerve trunk, or from one segment of the cord, but that there is an intermingling of collateral sensory nerve fibers with those normally furnishing sensation to the part through which sensation may be supplied after section of the main nerve supply.

But this does not answer the question raised by Dr. Ferguson, why these collateral nerve fibers do not supply sensation immediately after section of the main nerve trunk, but do not come into play until the nerve trunk is again reunited. This can only be explained by assuming that at the proximal cut end of the nerve there is a continuous irritation. The sensory impulses set up by this irritation pass into the cord, and seem to have an inhibitory influence on the sensory impulses passing to the cord along the collateral fibers, and so long as this irritation continues, so long are the collateral sensory impulses inhibited. This has, to a certain extent, been proven experimentally, *i. e.*, it has been shown that an irritation of a set of sensory nerve-fibers may inhibit the same sensation, coming into the cord through other paths.

Then the explanation comes to this, that when the cut ends of the sectioned nerve are reunited the irritation which has been continuous at the proximal end is removed, thus permitting the collateral sensory nerve supply to the anesthetic part to come into play. I would not have you think this definitely proven, but only offer this as a suggestion based upon certain physiologic experiments.

Also, Dr. Peterson has spoken of certain variations noticed in the function of both sensory and motor nerves. This is in all probability due to changes in the nutrition of the muscle cells which they supply. It has been proven experimentally that living tissue, especially muscle tissue (contractile), if placed under conditions unfavorable to its nutrition, as the accumulation of poisonous products, etc., tends to do away with the nerve influence of the tissue. This has been shown to be true by letting the metabolic products accumulate in active muscle to such an extent that the nerve supply has no longer any influence. Then if a normal salt solution be permitted to circulate through the muscle, washing out the poisonous products, the nerve influence returns. In fact, I have often observed this phenomenon in studying the influence of poisons on contractile tissue, and it is well known that variations in the nutrition of muscle tissue causes variations in the influence of the nerves supplying such tissue.

Dr. SANGER BROWN—The careful and thorough observation and concise expression in the paper we have just listened to reflect much credit upon the author. The Academy is certainly to be congratulated upon the accession of the essayist to its membership. I also have been very glad to hear the summary of our present knowledge regarding the regeneration of nerve elements by so competent an authority as Professor Huber. From all observations and experiments at present available, it would seem quite reasonable to assume the existence of collateral paths for the conduction of both motor and sensory impulses, similar to what is observed in the circulation, and in a similar way, to assume that when the more ordinary paths are interrupted the collateral paths are susceptible of development, and that the number and magnitude of these collateral paths vary greatly in different individuals. Assuming this hypothesis to be true, the explanation of much of the improvement that occurs from a few hours to a few days after the operation in these cases is, to my mind, reasonably explained on the ground of suggestion; that is to say, these collateral paths existing, suggestion would effect the necessary stimulus in the cortex to produce the result observed. Though not quite all the phenomena of rapid improvement may be satisfactorily explained on the hypothesis of suggestion, many of them are satisfactorily so explained. Certainly it is not reasonable to assume that the nervous energy could proceed through, perhaps, several centimeters of the inserted nerve trunk and then through a distal segment of nerve trunk devoid of axial cylinders, whereas all the conditions of the operation and of the influence brought to bear upon the mind of the patient after the operation are usually pre-eminently calculated to produce a powerfully suggestive effect.

Dr. PETERSON—It is only in exceptional cases that we will be able to determine whether the connective tissue has been increased at the point of lesion after our nerve transplantation cases. Therefore, Dr. Kiernan's criticism will not hold, and we will have to depend upon the results of animal experimentation.

It is to be regretted that the amputated fingers were not

preserved in Müller's fluid, as the microscopic examination when the proper method of staining the axis cylinders could have been used, would have been very interesting. The patient's second finger is now troubling him, and if it be amputated I will see that it is preserved in the proper fluid.

It does not seem to me that Dr. Ferguson's criticism, that in the case reported we were not dealing with trophic changes due to section of nerves alone, should have much weight. It is true that the ulnar artery was also severed, but this will not explain the presence of the trophic changes, and if the changes noted were due to a loss of arterial supply, it is difficult to explain why the nutrition of the hand improved so markedly after the operation upon the nerves alone. A study of reported cases will also show that the same conditions as were present in the case reported before and after the operation may exist where the arterial supply has not been interfered with.

As suggested by Dr. Brown, one is naturally suspicious that the mental attitude of the patient may have a bearing upon the early return of sensation. I think this factor can be safely eliminated in the present case, however. It will also fail to explain such rapid return of sensation as was quoted in the paper, when there was actual loss of nerve substance. The reason why sensation is not conveyed through the collateral nerve paths immediately after the injury and is later on after an operation, must be determined by further experimental work.

Cincinnati Academy of Medicine.

Meeting held June 6, 1898.

Dr. HORACE WHITACRE read a paper on

THE USE OF IRRIGATION AND WET APPLICATIONS IN SEPTIC SURGERY.

The paper opened with a brief review of septic conditions calling for these measures, including cellulitis, septic machine wounds, compound fracture, head wounds and pelvic cases, with a division of septic wounds into the local and spreading type of infection. The great lack of conservatism in the treatment of such conditions was deprecated and the irrigation methods offered as a valuable aid in saving tissue. In considering the use of wet applications, a cellulitis of the hand was taken as an example, where a scratch is the point of infection, the finger swollen and painful, back of the hand reddened and puffed, and lines running up the forearm. The pathologic condition of the tissues was fully described and the essential lesion shown to be a growth of the virulent micro organisms within and along the line of the deep lymphatics. From this the indications for treatment are shown to be some antiseptic that will be absorbed by the lymphatics and carried along these channels to destroy the germs. The wound is too small to absorb and the skin is an osmotic membrane covered by fat and skin sebum and saturated with cholesterin fats, so that only those substances will osmose which will mix with this covering. Such substances are carbolic acid, acetate of lead, acetate of aluminum, etc., while those that will not are $HgCl_2$, NaCl, KI, etc. It was shown that a voluminous wet dressing of 1 to 80 carbolic acid retained moisture and heat and an antiseptic kept in contact with the skin for constant transfer to the seat of germ activity; also that $HgCl_2$ could have no such effect. This dressing is of value in all types of spreading inflammation and serves to abort many such attacks. The form of irrigation known as submersion, in warm water or weak antiseptic solution, was next taken up in its application to: 1. Cases of continued cellulitis where repeated incisions had been made, through and through drainage established and painstaking dressings persisted in, yet the tissues remained sodden and infiltrated, joints are destroyed, and the loss of the part is imminent. 2. Severe lacerated injuries, including compound fractures, where septic infection is present, the tissues widely involved and the wound has a pork-like appearance. 3. For the purpose of maintaining life in tissues where the circulation is cut off by lacerating injuries of the larger blood vessels (infection present or not), and by plaster, splint or other bandage. Under 1 and 2 the advantages gained were: 1. Water by direct solution and by diffusion takes up and carries away large quantities of the toxic, crystalloid, chemic products of the bacteria which are the source of the entire local and constitutional reaction. This, based on the fact that it is not the bacteria that are harming the cell or the body in general, but the toxin which by acting on the cell lowers its vitality and gives access to the bacteria, or by diffusion into the blood acts on the thermogenic center to produce fever, or in the heart, liver or kidney to produce cloudy swelling and fatty degeneration. In submersion the diffusion process is into the water instead of the blood. 2. Water alone is healing. 3. Moisture prevents exsiccation of the secretions, relieves tension and renders the tissues soft. 4. Heat to a surprising degree retains and brings back life to tissues that otherwise would be hopelessly lost. 5. Any antiseptic, such as carbolic acid in very weak solution, would be absorbed into the lymphatics and the tissues saturated by an antiseptic agent in such strength as to inhibit the growth of germs at their seat of development. Clinically the change in the patient is a prompt drop in temperature, diminished edema, the wounds clean up and tissues are saved that had seemed already lost. A special point was made of the natural resisting forces of the body represented by the vital energies of the cell; the fact was recalled that great numbers of bacteria can be eliminated without the slightest damage to the system, and that at other times an infection resisted with very slight artificial resistance. These facts call for agents which will stimulate the nutrition of the cell and not for strong agents which will lower the resisting power forces. Under 3 (submersion) it was shown: 1. That blood remains fluid and the vessel walls normal in the distal portion of an injured or obstructed blood vessel. 2. That the heat of a part is very rapidly diminished when the blood supply is cut off, a condition favoring the rapid death of tissue. The case of a trephine button was cited, also the fact that a Thiersch skin-graft may live twenty-four hours if kept in normal salt solution, and take well when applied. These and many other things would show that cells may live a long time without blood supply, and the use of submersion is based upon the fact that we artificially maintain conditions of heat favorable to the life of the cell until anastomotic circulation can establish itself. Irrigation by a constant stream was next considered and was again stated to be based upon the fact that the great object in septic surgery is to obtain good drainage, and that no permanent dressing, no matter how frequently changed, affords perfect drainage, but leaves secretions in contact with the wound for absorption. The measure consists in conducting a gentle stream of 1 to 1000 carbolic or to 10,000 $HgCl_2$ to the bottom of a septic wound and allowing this to bathe the wound constantly. It was stated that most of the germs were probably beyond the reach of an antiseptic and deeper in the tissues but the advantages seemed: 1. The mechanical removal of secretions and debris. 2. The prevention of the entrance of pathogenic bacteria. 3. The diffusion of toxins externally. 4. In carbolic acid we have an antiseptic that will penetrate albuminous matter and the tissues. 5. The main advantage is good results. The measure fails: 1. Because the flow of fluid is too slow. 2. The fluid often runs back along the tube and reaches none of the important interstices of the wound. 3. Irrigating fluids are often too strong. The application to pelvic cases was considered in its mechanical difficulties and much stress was placed on the proper placing of the irrigating tube of soft rubber at the bottom of Douglas cul-de sac, and often a second tube by means of a Y attachment into the lateral recesses.

Chicago Ophthalmological and Otological Society.

Regular Meeting, April 12, 1898.

Dr. COLEMAN in the Chair.

Dr. WESCOTT showed a case of

CONGENITAL CATARACT.

The patient, 27 years old, says he is one of many children having the same condition. Two of his relatives had been operated upon, and one had been given better vision. He is unable to tell the nature of the operation. Vision in one eye is $^{20}/_{200}$, and in the other $^{20}/_{100}$; not improved under atropin. The opacity is so large that when the pupil is fully dilated there is only a narrow ring of transparent lens.

Dr. HALE—I have had one case similar to the one shown by Dr. Wescott, and operated on one eye with a resulting vision of $^{20}/_{40}$. This patient gets along very well by using his unoperated eye for near, but with glasses he complains that he can not see quickly enough on account of the asymmetry.

Dr. TILLEY—The fact that there is no improvement under atropin is considerably against the hope of vision being greatly restored.

Dr. COLEMAN—I would operate on the worst eye of the two if there is any possibility of improving vision. Asymmetry is an objection, but not so great as commonly thought. I have had several patients get good binocular vision with correction. I would not expect to improve this case by an iridectomy, but think discission the proper thing. Extraction of these lenses has not been a success in my hands.

SUPPURATING LID.

Dr. C. P. PINCKARD—This gentleman has kindly consented

to appear before us this evening to show an interesting condition of the lids, a condition I have not seen anything like before. It started some six weeks ago in the form of a sty which was opened and for a day or two apparently got better. Shortly after, however, the lid began to swell considerably and an ulcerative process commenced in the neighborhood of the sty, involving the conjunctival border of the lid for perhaps half an inch toward the outer canthus. Also one of the Meibomian glands upon the center of the lid began to suppurate. There was no previous chalazion, but from the gland extending clear through the duct to the border of the lid the same process started up. The peculiarity connected with the case is the character of the process. Along the border of the lid it destroyed the tissue very rapidly, so that in wiping it off there was not only considerable pus but shreds of the lid tissue itself. The process in the Meibomian gland broke through into the conjunctiva and a considerable quantity of the tarsus has been destroyed as well as the superficial parts of the conjunctiva extending down to the border of the lid. The first treatment was mild, followed, however, by strong escharotics, such as the use of nitrate of silver and powerful solutions of corrosive sublimate, but all the time the pathologic process kept advancing. About ten days ago, when the case first came into my care, ichthyol was started and seemed to have a beneficial effect on the diseased condition, but not much. After two or three days, the improvement not being marked, I started chinosol solution in the strength of 1 to 1500, and from that time it has continued to improve. The principal point is as to the nature of the process. There is absolutely no history of any general infection. Dr. Evans, in the Columbus Medical Laboratory, examined some of the pus and tissue from the edge of the ulcer for tubercle bacilli with negative results. An inoculation was made in gelatin, and after two days there was no growth. Then an inoculation was made in agar, and then in agar and glycerin, and kept in the incubator for twenty-four hours with no result. So we have nothing whatever to go by in this destructive process of the lid. If it be tuberculosis of the lid it certainly assumes a very unusual form. The hair follicles are not involved. The ulcer is now in the healing stage but shows the large amount of necrosis which has taken place.

Dr. ROBERT TILLEY—The case reported by Dr. Pinckard is interesting as well as curious. Chinosol, of which he speaks, is being lauded as a valuable antiseptic, and yet at the same time there does not seem to be any vestige of any bacteria to be found on the minutest observation. Chinosol, which is manufactured by a Hamburg firm, is difficult to get, but I have used it somewhat with apparent satisfaction under certain circumstances. I suppose the still more recent article, protargol, may have the same effect.

Dr. C. P. PINCKARD—This must be from our present knowledge a septic process, in spite of the fact that no culture could be made, and that powerful antiseptics like silver and corrosive had no beneficial effect. They made it worse, and during their use the disease spread rapidly, the tissue broke down, and there were shreds of tissue at the bottom of the ulcer. The ichthyol, which is not an escharotic, and the chinosol, which has a mild action, seemed to at once act favorably.

EMBOLISM OF ONE OF THE BRANCHES OF THE CENTRAL ARTERY OF THE RETINA.

Dr. H. W. WOODRUFF of Joliet, Ill.—I show you a case in which there occured sudden diminution of vision in the left eye in a young lady 20 years of age. It came on last Thursday evening while she was at home. She has had blurring of the eyes before, but this condition was something entirely different from anything she had previously experienced. She has a refractive error in both eyes. I saw her yesterday afternoon for the first time, and found on ophthalmic examination what is undoubtedly an embolism of one of the branches of the central artery of the retina. The light edematous area is to be seen toward the temporal side of the disc. The veins are plainly visible over this light area. Her direct vision is $^{20}/_{120}$. There is a large scotoma in the field of vision corresponding to the occluded area. There is no sign of any kidney or heart disease. Her urine has been examined and shows no albumin and but a trace of sugar.

Dr. ALBERT B. HALE read a paper entitled

STATISTIC REVIEW OF FIVE HUNDRED CONSECUTIVE CASES PRESENTED AT THE HEBREW CHARITIES DISPENSARY.

In this summary it is not meant that there were only so many cases of trachoma or of iritis, etc., but the diagnosis of the most important sign or symptom for which the patient wished treatment was considered; and therefore many examples of trachoma or refractive error are not put down in the table. Cases called amblyopia are those which require further examination, for which they failed to come. Operations not mentioned in the table were done as required. I can not explain why there have been so few cases of choroidal or retinal degeneration, because I have a large material in myopia with all its associated effects upon the fundus, and European clinics dealing with the same races report more instances of choroiditis and retinitis. I notice, too, that injuries are rare. This I ascribe to the fact that as a class this people is not industrial, but domestic and commercial. Cases of gonorrheal conjunctivitis are rare, probably because of the custom of early marriage and of the commendable virtue of both male and female parents.

I present the table herewith.

	Per cent.	Schwabe's Leipzig percentages from 15,675 cases.
1. Diseases of the lids: Sty 14, chalazia 6, cysts 1, phlegmon 5, fissure 1, pediculi 2, insect bites 2, papillomata 1, burns 1, blepharitis 56; total, 89	17.8	10.10
2. Diseases of the lachrymal apparatus: Dacrocystitis, 10	2.0	2.19
3. Diseases of the conjunctiva: Injuries 11, cyst 1, foreign bodies 22, trachoma 24, pterygia 1, herpes 1; Inflammations: Simple acute 51, simple chronic 21, follicular 2, phlyctenular 16; total, 150	30.0	18.12
4. Diseases of the cornea: Injuries 5, foreign bodies 20, tatooing 1; inflammations: Simple infiltrate 9, vascular 3, ulcerous 21; total, 59	11.8	19.19
5. Diseases of the iris: Inflammations: Plastic 5, serous 1; total, 6	1.2	1.59
6. Diseases of the choroid: Choroiditis disseminata, 1	0.2	1.64
7. Glaucoma, 3	0.6	0.65
8. Cataract: Congenital 1, senile 7; total, 8	1.6	2.81
9. Injury to bulbus, 6	1.2	0.56
10. Refraction: Myopia 34, hyperopia 63, astigmatism 3, presbyopia 26, squint 12, nystagmus 1; total, 139	27.8	36.31
11. Diseases of the optic nerve 4	0.8	2.22
12. Amblyopia and amaurosis 25	5.0	0.44
	100	

Dr. PINCKARD—At the eye clinic of the Michael Reese Hospital, where we have the same class of people to deal with, we see many cases of choroiditis. I do not recall the exact percentage, but it is comparatively large.

Dr. COLEMAN—I am surprised to learn the large percentage of myopia in Dr. Hale's report. I can safely state that not more than 10 per cent. of my cases are myopes. I have little faith in statistics of refraction unless the cases are all tested under mydriatics.

Dr. WESCOTT—I do not believe I see a case of myopia once in twenty-five cases. It is a rare condition compared with hyperopia with me.

Dr. MANN—I meet with a larger percentage of cases of myopia in the Germans, Russians and Poles than in any other class of people.

Dr. HALE—All the cases reported as myopia were examined under a mydriatic.

Dr. ELMER A. LAWBAUGH reported a case of

BILATERAL TEMPORAL HEMIANOPSIA.

The case I have to report this evening is one of bilateral temporal hemianopsia in acromegaly. Though twelve years have passed since P. Marie first established and described the typic characteristics of this disorder, we know comparatively little more concerning the etiology, pathology and treatment of this disease. The patient is a woman 43 years of age, has had four children, three of whom are living; family history negative; first noticed the disease eleven years ago when menstruation ceased and a constant constipation commenced, which is relieved only by a very active cathartic. Headache is constant, always occipital, sometimes referred also to the top of the head near the anterior fontanelle, and about the size of a silver dollar. Memory is very poor; somnolency present. The tongue is greatly enlarged, also the tonsils and some of the adjacent tissues and a tickling sensation present there. There is typical condition of the hands and feet, enlargement of the head, pronounced prognathism, numbness in extremities, tactile sense impaired, urine normal, great thirst, good appetite; thyroid gland not enlarged, and no thoracic thyroid to be found. Kyphosis is present, also joint pains. Height, 5 feet; previous weight, 130 to 135 pounds; present weight, 186 pounds. Wore No. 4 shoe formerly, now a No. 7 man's arctic. Chest measure forty one inches. Eye symptoms: Lids thick and edematous; conjunctiva and cornea normal; lachrymal apparatus normal; pupil normal in size but sluggish in action. Partial atrophy of both discs; veins congested and arteries small and pale. Retina normal, as also action of muscles, though very slow to demands of will. Field of vision, as shown by a perimeter in which colored lights were used, shows

bilateral temporal hemianopsia in white, blue, red and green fields. Right vision 10/200; left vision, 10/20. In from 45 to 50 per cent. of the cases eye symptoms were present. Since 1890 there have been reported twenty-one cases of bilateral temporal hemianopsia. One case of homonymous hemianopsia has been reported by Sir William Broadbent. A number of autopsies have been reported. Probably the most thorough one is that reported by Dr. Osborne, who is inclined to the opinion that the disease is due to lack of function in the pituitary body. In my case the wrist measures eight and a half inches around, and the ankle fifteen inches. The sternum and intercostal cartilages are enlarged. Kyphosis is almost always present.

Dr. WARE—I saw one case a number of years ago with beginning atrophy of the optic nerve, the result probably of bone pressure, as the bones of the skull were thickened and enlarged.

Dr. WESCOTT—I examined the case some years ago as to the eye symptoms and found some narrowing of the fields with partial atrophy of both nerves. The patient was sent to me because of constant headache. Glasses were of no benefit.

Dr. PINCKARD—I have seen three cases and none of them had any subjective symptoms of eye trouble.

Dr. LAWBAUGH—This is the fourth case I have seen. One had temporal hemianopsia in the right eye with total atrophy in the left. But the other two presented no eye symptoms at all.

Dr. COLEMAN—I have seen two cases similar to the one reported by Dr. Lawbaugh. One, a young woman 22 years of age, had bilateral temporal hemianopsia, but suffered little inconvenience from it. The second case was a man 75 years of age, who had right temporal hemianopsia with contracted field for all colors. Vision was 20/40 in one eye, the other being imperfect for many years.

Dr. LAWBAUGH—Benson, in the *Dublin Medical Journal*, reports a case of bilateral temporal hemianopsia with acromegaly in a man who was a drinker and smoker, but after dropping these habits the normal field of vision was regained. Benson attributed the symptoms to pressure on the chiasm, the tumor being increased by these poisons, and upon their cessation the normal size of the pituitary body was restored and the pressure relieved. He afterward resumed his old habits with resulting atrophy in one eye and temporal hemianopsia in the other.

Dr. WESCOTT showed specimens from a case of primary carcinoma of the conjunctiva. An examination made by Dr. Hektoen showed the tumor to be a carcinoma growing from the epithelial layers.

C. P. PINCKARD, Secretary.

103 State Street.

Associated Health Authorities of Pennsylvania.

Fifth Annual Meeting held at Lancaster, Pa., May 18 and 19, 1898.

(Continued from page 1464.)

FIRST DAY—AFTERNOON SESSION.

After the report of the Executive Committee, urging an effort to obtain a better representation from the boards of health throughout the State, Prof. J. N. RODDY of the Millersville School read a paper entitled

WEATHER FORECASTS AND HEALTH.

He said: There are two great fields of human knowledge: in one we seek truth for its own sake, and all honor should be to him who enters the field, for man is slow to reward the discoverer of pure truth as he merits. In the other sphere we are seeking to bring knowledge into relation with things. This is the application of knowledge to practical uses. In this experimental application of truth modern science has accomplished wonders for mankind. It has increased his earning capacity many times over. In no application of scientific method has more advance been made than in the treatment of disease; in sanitation, or in the creation of healthful hygienic conditions. Almost every department of knowledge has been made to contribute; new departments of investigation have been inaugurated. Hence it is somewhat of a surprise to find that little has been done in the way of experimentally tracing the relation of local weather conditions as well as general climatic conditions to health. It is especially desirable here in America that we seek the cause of whatever relation exists between weather and health, since we live under very inequable weather conditions. Moreover, weather does not come in homeopathic doses, but when a blizzard, a warm wave, or a cyclone strikes us, no one could desire a more generous portion. We all appreciate the fact that certain diseases lie in belts mainly within certain isothermal or temperature limits. Yellow fever fluctuates back and forth over the equator with temperature changes. Smallpox is a winter disease dying out with the increase of heat. These statements express not the reasons for the relation but simply a relation in very indefinite terms, because no one has even partially investigated all the conditions favorable or unfavorable to the propagation of the germs of these diseases. To obtain a concrete conception of the relation we know in reference to weather changes and health, and to personal comfort, we must express the laws upon which forecasts are based. Weather seems fickle but at the same time is subject to rigid law. The fundamental elements of weather changes are high and low pressure areas produced by heat and cold, mainly. Another fundamental element is moisture in the form of vapor distributed through the atmosphere in ever varying quantities, relatively. There are great varieties of topographic features making up the land surface of the earth, and many kinds of soils. When these receive the sun's radiant energy they are heated to different degrees, and hence the area most heated becomes by the uplift of air over it and the consequent outflow at the top a place of low pressure, while surrounding regions receiving the outflow of air above become areas of high pressure. High pressure areas may result from excessive cooling and consequent inflow of air. Since the air whirls in or out low pressure areas are cyclonic and high are anticyclonic. Humidity conditions may enter as a factor in making the highs and lows more equable. It follows, therefore, that in summer as the result of the great excess of heat on the land masses over that of the sea that low pressure areas predominate on the continents and highs on the ocean. The reverse is true in winter. These relations are an uninvestigated question. We may suggest certain theoretic problems. Every low, in consequence of the exhausted condition of the air, may contain much vapor and therefore be deficient in the essential to life oxygen. Lows in consequence are depressing and we would infer that care should be exercised as to skin conditions, in diet, and against over-exhaustion. The blood is necessarily not fully oxygenated and the digestive functions are in consequence not so vigorously performed; nervous energy is lacking; the tone of the body is low. This is theoretic, yet records show the greatest number of suicides under these conditions of low pressure and high humidity. Whether this be a coincident or a sequent relation, we need to investigate. With high barometer and low humidity there is greater abundance of oxygen; skin and lungs act vigorously; oxidation is rapid, the body demands more food and we feel buoyant. Nervous energy is in excess. Might we not under these conditions overrate some organ and suffer in consequence?

Every area of low pressure is an area of precipitation and an area toward which the wind blows from all directions. Every area of high pressure is one from which the wind blows away in all directions and the latter is also calm and clear. It is also a law of weather that in one zone the prevailing winds are westerlies. These prevailing push all weather areas across our country toward the east. If a low pressure area starts in the west it crosses the continent bringing with it some form of precipitation, storms, and higher temperature than usual. This low will be followed by a more or less developed high, bringing reverse weather conditions. From these laws it would seem to follow that we can prepare ourselves by proper clothing, proper food, prudent diet to withstand these changes and keep in perfect health. We do not regulate ourselves as the waves of so called grip following in the wake of certain classes of storm indicate. The greatest and perhaps the most sudden fluctuations of weather are experienced in some of the New England States, and especially is this true in the changes in temperature and humidity. Corresponding with these sudden changes it is said by good authority that there are more pulmonary affections here than elsewhere in the country. Again, whether this is a direct resultant of the weather changes, or of other hygienic conditions, we as yet do not know, but it proves the necessity for thorough investigation. Not only do we experience the alternations of pressures and humidities, but also of alternating winds when an area of high or low pressure passes us. Suppose a low pressure area to be west of us, we will then experience east winds until the area of low pressure reaches us, when the winds will have reached their greatest velocity from the east and precipitation in some form has attained the maximum. When the low pressure, which we may term a storm center, passes us going eastward the wind is reversed, blowing with great velocity and bringing clear and cool or cold weather. Since the winds do not blow straight in nor straight out from the storm center, they are termed cyclones or anticylones. In winter they invariably result in blizzards that cross the United States in about two days and

often bring with them a rapid fall of temperature amounting in many cases to 40 or 50 degrees, and in northern Texas to 60 degrees. Over our continent in summer, storms of the same character sweep bringing in their wake westerly waves, dry, dust filled, warm air called hot waves with rises of temperature as much as 20 degrees. Each of these is predicted by the weather bureau and announced at least twenty four hours ahead of the storm. It follows that these sudden changes in temperature, winds and humidity will affect us if we do not prepare for them, and since many of the diseases have their inception in common colds and since a cold is a mechanical condition of the pores of the skin in which the pores are simply closed by sudden chilling, thus throwing greater work on the other excretory organs, that some attention must be paid to clothing and food and perhaps mental condition. We need greater attention to these changes, a better appreciation of the laws, and subsequently a greater knowledge of the relation of weather changes to bodily conditions. In a series of experiments recently made by the Smithsonian Institution on the questions of external temperature, clothing and bodily temperature inside the clothing, several curious results were noticed. One was that there is no correspondence between our bodily sensations and the actual external temperature. It often followed that when the temperature was quite low the body did not feel correspondingly cold and *vice versa*. It was found that there is a fairly constant relation between bodily sensation and the humidity. With high humidity we suffer more from cold than when the air is dry. The reason is almost self-evident. Bodily functions are performed slowly when the air is full of moisture, because of the lack of oxygen and the partial failure of the skin to perform both its excretory and absorbent functions. The body soon clogs. Heat is not generated. Colds very easily result.

One of the strange meteorologic phenomena of our country is the magnetic storms. These, moving somewhat like a cyclonic disturbance, often move across the continent from the west to east. They also have an effect upon us in some mysterious way. Patients suffering with neuralgic or rheumatic affections find these storms intensify their pains and that wave like movements of the pains occur. This perhaps indicates some relation between nerve centers and magnetic conditions. Cyclonic disturbances which usually develop electric conditions of the atmosphere also produce these effects, but with less intensity. This leads us to say that we all desire the greatest possible personal comfort which tends to longevity and therefore highest mental efficiency. We secure this by careful attention to dietetics, efficiency of clothing and weather conditions. Finding that bodily sensations are deceptive, should we not regulate our lives more scientifically than we have in the past, more by the thermometer and barometer readings daily furnished us by the weather bureau? The daily isotherms and isobars furnish us the general conditions by which we may judge of the weather and to these our own observation and reasoning must furnish the requisite supplements to furnish local forecasts. In view of all these facts it becomes almost imperative that we institute investigations on the relations of high and low pressures to skin functions, to oxygenation of the blood and to digestive functions; so too with humidity. A large field is open for investigation on clothing in relation to personal comfort, healthfulness and the preservation of equable temperature for the body. At the same time it must not be forgotten that magnetic storms and their influence upon us need attention. I believe such investigations will well repay us in giving a better understanding of our relation to climatic conditions.

THE BUBONIC PLAGUE

was the title of a paper by Dr. BENJAMIN LEE, Secretary of the State Board of Health of Pennsylvania. He said: A plague is a wide-spread, virulent, epidemic disease; a pest or pestilence. One disease of this nature, however, is so pre-eminent above all others in point of malignity, destructiveness and horror that by common consent it has obtained the designation of "The Plague." The word signifies "stroke" and is a survival in our language of the belief of a superstitious age that an epidemic was the "stroke of God," the conscious vengeance of an angry deity, thus making the Almighty responsible for the inevitable results of our infractions of the simplest laws of nature, or, as has been well phrased, "flaunting our filth in the face of the Deity." It has also been denominated the "Oriental Plague," because it has always originated in the East; the "Egyptian Plague," because for a long period, comprising the last century and the early part of the present, it was never absent from Egypt; the "Levantine Plague," because it has prevailed in all the cities of the eastern end of the Mediterranean Sea, and the "Bubonic Plague," because one of its marked characteristics is the appearance of glandular swellings or buboes in various parts of the bodies of its victims. Under the name of "Black Death" it is estimated in the course of five years, about the middle of the fourteenth century, to have carried off 25,000,000 people, or one-fourth of the entire population of Europe. London, Marseilles, Toulon, Florence, Moscow, Transylvania, Venice, Lyons, Paris, Avignon, all have their fearful records of its devastating horrors. With the march of civilization and the adoption of personal, domestic and municipal hygiene, it has, however, been crowded back into the domains of the filth loving Asiatics with whom it originated, having last invaded Europe on the lower Volga in Russia nineteen years ago.

In certain regions in China, and in the Valley of the Euphrates, it has never ceased to exist. Since 1873 it has constantly prevailed to a greater or less extent in the province of Yunnan, China, and for more than twenty years has been present in the city of Pahkoi. In February, 1894, it showed itself in the city of Canton, spreading with such rapidity that in the space of three months the number of deaths ran up into the tens of thousands. By the month of May it had reached Hongkong, ninety miles distant. It is from the careful and intelligent report of James A. Lowson, M. B., medical officer in charge of the Epidemic Hospital of that city, that we gain our definite knowledge of the disease as it appears during the present outbreak. Previously to this the only exhaustive and scientific study of this disease which had been made was the report of a committee of the Royal Academy of Medicine of France, made in the year 1846. This committee devoted two years to its work and, while it carefully sifted such histories as were available of the various European outbreaks in past centuries, it derived the greater part of its information from medical and official eye witnesses of the great epidemic in Egypt in 1835. Making allowance for the advance made in our knowledge of the causation of epidemic diseases during the intervening half century, we find a striking correspondence in the results. It is interesting to note that even at that day a member of the Academy, Bosquet by name, during the discussion which followed the reading of the report, announced his belief that the cause of the disease was a germ, and formulated the statement, remarkable in the light of modern discovery, that "every contagious disease creates a germ capable of reproducing itself." That which in his day was theory, and for announcing which he was ridiculed, has today become fact through the researches of a distinguished scientist, a native of a country at that time almost unknown, but since thrown open to the light of civilization by the action of the Navy of the United States, the Japanese physician and bacteriologist, Kitasato, to whom belongs the distinguished honor of having first discovered the bacillus of this dread disease, a discovery second only in importance to that of the germ of Asiatic Cholera by the immortal Koch.

From Hongkong the disease was conveyed to India, evidently by ships, making its appearance in Bombay in August, 1896, but its presence was not officially acknowledged until the physicians had recognized it for a month; much valuable time was therefore lost. In this city it raged for months with a virulence that was truly frightful. The facts of the Bombay visitation bear out in a very striking manner the history of the plague's ravages in the Middle Ages, when its victims were largely among the indigent and ill-fed classes. The outbreak in Bombay first occurred in one of the most squalid quarters of the town, and with certain exceptions it has spared the wealthier classes. Englishmen, whether through a transmitted immunity which they have shared with the nations of Europe since 1841, or from a higher standard of living or from whatever cause, have enjoyed a freedom from attack so remarkable as to render isolated cases among them quite phenomenal. While the mortality from all causes ran up to sixty-three per thousand at the beginning of November, and again to sixty-three per thousand in the third week of that month, the general death rate among the well fed Parsees was just under thirty, among the even better fed Europeans twenty-four, and among the amply fed European community only eighteen per thousand. But among the filthy low caste natives the mortality was appalling. For weeks the deaths from plague alone numbered more than two hundred a day. Huge flocks of vultures hovered all day long over the "towers of silence" where the bodies of the Parsees are laid out on an iron grating to be torn to pieces by these unclean birds. In the Hindu burying ground graves could not be dug fast enough, and the Mohammedan cemetery is described as having presented the appearance of a battlefield. All night long the funerals wound their melancholy way through the streets, preceded by priests with flaming torches, breaking the midnight stillness with the discordant clashing of cymbals, and the weird dirge, "Ram sri

ram, Ram bolo bhai ram," to the accompaniment of the mournful wail of long twisted horns.

The disease may be briefly described as an acute febrile infectious disease, characterized by a tendency to buboes or suppurating lymphatic glands and carbuncular swellings in various parts of the body, marked cerebral and vascular disturbances and intense prostration.

It is due to a specific germ, a bacillus or short rod with rounded ends, which has been found in the blood and glands. Infection takes place through the lungs, digestive canal and wounds or abrasions of the skin. The period of incubation is brief, often less than two, rarely more than six, days. The death-rate is higher than that of any other known disease. About eighty out of every hundred stricken die, and the course of the attack is swift as well as sure and fatal, death usually occurring on the second day. If the patient is going to survive, symptoms of improvement begin to show themselves between the sixth and tenth days. No treatment has yet had any effect in reducing its mortality. Much is hoped, however, from an antitoxic serum similar to that used in diphtheria.

One very curious feature of its approach is that it attacks rats before it attacks human beings. These creatures come out of their holes to die, evidently in a state of delirium, as evidenced by their losing all fear of man. This would lead to the supposition that the germ grows in the earth, spreads along the surface and is not communicated through the air. This theory is also supported by the fact that certain localities become infected while others not far distant remain entirely free from infection. In this respect there is a striking resemblance between the mode of propagation of plague and yellow fever. This latter disease will sometimes prevail on one side of a street while those living on the other side are entirely free from its attacks. All the domestic animals are liable to this infection. Dogs, rats, hogs, buffalo and other horned cattle, and domestic fowls have all been known to die of it in great numbers. As all of these creatures browse or feed upon the ground, this fact gives additional support to the theory advanced.

The conclusion which we arrive at then is that this affection is not contagious in the strict sense of the term, not conveyed from person to person, but infectious, clinging to places and things, the earth, houses, ships, furniture, bedding and clothing, and developing its deadly qualities in such situations outside of the human body. The question may naturally be asked, Is not this subject rather one of curious interest than one of practical importance? Why waste our time considering a disease which has never been seen in this country and is never likely to be? To this I reply that there was a time when neither scarlet fever nor diphtheria had ever been seen in this country, and that within the present century. It is well known that the early settlers brought smallpox to this virgin land among the other blessings of civilization, and that under its blighting influence the aborigines, if they were such, melted away like snow before the sun. Plague is most readily conveyed in ships, and when once the soil of a country has had the seed sewn in it, the weed becomes most difficult to eradicate. The following incident shows that this danger is a real and not a mere fancied one.

On July 16, 1897, the British ship, *Annie Maud*, arrived at the U. S. Quarantine Station, Angel Island, California, having lost one of her crew from bubonic plague during the passage from Calcutta. Two more of the crew were seized with the disease but recovered. Under the careful system of disinfection pursued by the authorities, the infection was destroyed, but the incident is significant as showing with what ease the disease may be brought to our shores. The energetic health officer of the Port of New York was thoroughly justified in taking the precaution to disinfect all the mails from plague stricken districts in India. Everywhere in Europe the most energetic measures were taken to prevent the introduction of the disease through vessels or cargoes arriving from East Indian ports. We can not rely on climate to protect us from its invasion, as during the present century even it has been seen as far north in Europe as Moscow and points in Norway and Sweden.

Impressed with a sense of the responsibility resting upon them, in consequene of the frightful ravages of this disease in India at that time, and its evident tendency to spread westward, representatives of the State Board of Health, of the Board of Health of the City of Philadelphia and of the State Quarantine Board, met in conference on Jan. 23, 1897, to discuss the possible invasion of the disease, and the provisions which should be adopted to prevent such a calamity. A certain line of action was determined upon for each of these bodies in accordance with their respective powers and duties. The leading spirit of this little assemblage was Dr. Wm. H. Ford, then President of the Board of Health of Philadelphia, whose useful career was in a few short months so abruptly cut off. I can not better close this paper than by offering a brief and altogether insufficient tribute to the memory of that devoted Christian gentleman, faithful public officer and distinguished sanitarian. All the best years of his life were devoted unstintingly and without compensation to the good of his community. To him in great measure is due the admirable efficiency of the Board of Health in that city. Those of you who have been in the habit of attending these meetings will distinctly recall his noble personality and the wisdom of his words. At that conference he made substantially the following statement in regard to the possibilities of the arrival of the plague on these shores and the means which should be used to prevent it from finding a lodgment:

What concerns us most on this continent is the use of preventive measures. As it has been proven over and over again that this disease no longer occurs in countries where the people are prosperous and enlightened and rigid in the enforcement of sanitary measures, the prospect of the disease gaining a foothold in this country or of even gaining admission through our quarantine stations is extremely unlikely. Nevertheless, the wise man is never self satisfied, but always on the alert and prepared for any emergency that may arise. Our quarantine defences are, as a rule, excellent, and the officers in charge fully alive to the necessity of constant vigilance. As the disease prevails under faulty hygienic conditions, the obligation of the municipality is to remove all such faults and place the city in the best possible sanitary condition. Domestic and public cleanliness is the barrier to this and all other dangerous communicable diseases. The public management of the plague is the same as we are accustomed to enforce with regard to contagious and infectious diseases generally, and consists primarily and fundamentally in isolation and disinfection. A people prosperous, enlightened, progressive and scrupulous in the application of well-known hygienic measures need have little fear of the oriental plague finding a lodging place among them.

Dr. T. S. LIPPINCOTT of Hoppenville read a paper entitled

WHAT MEANS SHOULD PROPRIETORS ADOPT TO PREVENT THEIR REFUSE FROM BECOMING A NUISANCE?

He wished to present some insanitary facts relative to the various creameries. In September last my man commenced to deliver milk to the creamery and as is customary with all its patrons (the farmers), all fill their empty cans with slop which they take home for hog feed. It is generally understood on the outside that the farmer who sends his milk to the creamery gets skim-milk in return, but when it comes to reality, they are only entitled to the slop out of the outwells where all refuse of the creamery is conducted. This is exposed to all kinds of weather, but nothing affects these wells as does the sun and hot weather, as they are never covered, nor cleaned out, having run in them each day skim-milk, water, dirt and washings from the building and utensils. This decoction also came home in our milk cans. Imagine my surprise when my man emptied the return cans of slop, which was the foulest as to odor. Not unlike the worst kind of a water-closet, or human excreta. After a few returns of this kind, finding it to be a perpetual thing, my man refused to wash the cans, and no one could blame him. Yet the farmer continues to carry this home and feed his hogs with it or let them starve. This is not only so of one creamery, but all over the State, and with our experience after washing the cans, they retained the filthy odor for days, yet the farmers fill the same cans in the evening with fresh milk for the next trip, day after day. From the milk comes the butter to our tables, and I am informed the State Board of Health is unable to remedy this evil for lack of legislation. While little Jersey is prepared to meet and correct any such insanitary matter, imagine my surprise when I wrote to Dr. Lee and suggested that he send an inspector, whom I would aid in his work, and he informed me that this great Commonwealth had no such person to send. If our bacteriologists are looking for a fertile soil for bacteria, a visit to one of these wells on a hot day would furnish all he could desire. After several inspections of these places, I suggested an easy means of correction, an outlet making it a flush well. They reply it is time enough when such things become a law; so the evil goes on. We have a mass of statistics tracing bacilli to milk and it is to be hoped that this Association will agitate this matter till we have laws similar to those of New Jersey.

A free discussion followed and on motion it was referred to the Committee on Legislation with instructions to draw up an act and submit it to the legislature.

Under the head of voluntary contributions, questions, etc., Dr. Crowther brought up the subject of milk inspection. It was shown that wherever there was milk inspection, improvement invariably followed. The whole milk question should not be in charge of the Department of Agriculture as at present, but in the hands of the Board of Health of the State.

As the Committee on Legislation was yet to report, this matter was postponed until that had been heard.

Dr. THOS. TURNBULL of Pittsburg offered a resolution from the Sanitary Bureau of that city, urging legislation permitting the medical colleges to give diplomas for Doctor of Public Health to such students as had completed courses in hygiene and kindred sciences. Such persons should be preferred as medical inspectors for all boards of health. On motion the resolution was adopted.

FIRST DAY—EVENING SESSION.

The Annual Address before the Board of Health was given by Dr. J. T. ROTHROCK, State Commissioner of Forestry, on

SANITARY RELATIONS OF OUR HIGHLANDS TO THE STATE.

It was illustrated by means of the stereopticon showing the results of the destruction of the forests throughout the State.

He said: Civilized man has reached his present condition by a series of steps, which in all countries show a general resemblance, modified by the surroundings known as environment. Originally labor was the lightest; he sought the lands which gave large crops with little preparation; preferred the level, bottom lands; only went to the mountains for chase or from necessity. As to changing the character of the country, his influence was about that of the beaver. New needs, commercial relations, pressure of the population brought the duty of invading other fields and seizing resources previously unutilized. Soon he became aware that he was a machine, subject to wear and tear, ills and aches, resulting from location, and he was compelled to act accordingly. We all know men who are conscious of danger, but lack the mental keenness to take the necessary steps to avert it. All know regions having pre-eminent salubrity, and of small value for other purposes. These should be devoted to sanitary purposes. This raises the relation of the commonwealth to its population. The State should protect itself, provide for its perpetuity. Hence we have no right to despoil the estate of the future, but leave it in as good a condition or better than we found it. We are a chosen people only so long as we obey the moral and political laws. We have no right to render any region less healthful. No business interest has the right to injure the land so as to make it unfit for the people. We strike at the power of the commonwealth. There is State charity for the sick or injured, lame, halt or blind, insane, etc. The fruit grower is to be protected against diseases which invade his orchards, but what affects the vitality of the race is so little prevented that it is nothing. Tuberculosis must not in the future menace others. The State must interfere. The world advances faster than any one of us, and soon we become back numbers. It is over forty years since I began to observe the character of the various portions of the State. When I began, there was an area of say 8000 miles nearly in the center of this State almost a continuous forest. One-sixth of the State was in its original condition. Now hardly a vestige remains. The axe and fire have destroyed it. But one or two original forests of any size remain in the State. Now, if woodlands have any hygienic relation to the commonwealth, is it not time for protection to be given? Unfortunately these lands have no agricultural value; desolation is everywhere. In looking at the Adirondack region of New York, healthfulness stands pre-eminent; it is a standard. The pulmonary death-rate is 1 in 854 to 985 of the population. This is a great advance from 1 in 400 of the population in the regions adjacent to New York City. In the seven southern counties of New York, the rate is 1 in 1091. In McKean county of this State, the rate is 1 out of 1330. In thirteen years, 1881 to 1894, in Philadelphia, the rate from consumption has decreased almost 31 per cent. But as we can hardly anticipate a time when it will be as low as McKean county, that will stand as a comparison. Now if hospitals were located there the patients would have the advantage of every favoring condition. Of the hospital appropriation of this State, $843,800, only $18,000 were spent in the counties of Warren, McKean, Potter, Tioga, Bradford, Susquehanna, Wayne, Pike, Sullivan, Cameron, Elk and Forest. These twelve counties, endowed by nature with an exceptionally healthful climate, with a population of one-fifteenth of the entire State, receive about one-forty-seventh of the appropriations of the commonwealth. The inference is that because of the very healthfulness they possess they are to that extent free from the necessity for a more equitable division. Again, we are informed that the region is one exceedingly favorable for those afflicted with pulmonary troubles, and here we have a natural sanitarium equal to the Adirondacks. From the time of the early Aryans, men have longed for the freedom and rejuvenation of the woods. People who have lost their fondness for the woods have lost their virility. Pennsylvanians spend thousands of dollars annually in the Adirondacks, mainly because we have destroyed the primitive attractiveness of our own woods. In the above counties there are large areas where agriculture is impossible, and even grazing gives but slight hope of becoming remunerative. Much of it is abandoned, and later will come into possession of the State. Protective fire laws will in all probability be enacted and allow restoration of the primitive growth. This area can be turned to no better purpose than that of a State Forestry Reservation, the property of the people, dedicated to them and administered for the good of the whole people. Here sanitariums will be located. He quoted the bill of New York for the establishment of such places and hailed it as an omen of the future. The Rush Hospital of Philadelphia is the only one in our State for consumptives. This year it received $5000 from the State, and is one of the forces working for better means of dealing with this disease. Abroad, all lead us in this care for consumptives. Recently, Dr. S. W. Trimmer has given, free, a lot of land favorably situated near White Haven for the erection of a sanitarium for consumptives. It is the starting of a great movement which promises to commend itself to the citizens and legislators. The ground is high, air pure, railroad access easy, and delightful drives will tempt the patients out into the open air. He alludes to three cases of this disease which made a deep impression on his mind: one a physician who had become so weak from tuberculosis as to be unable to work. On a raw day in March he accompanied the speaker in a drive thirty miles to a highland in Sullivan county. A snow storm came on, the man became exhausted when they reached the hotel, and it seemed doubtful if he could rally from the condition into which he had fallen by the exposure. He was put to bed in the hotel, restoratives employed, rallied, gathered strength daily, in six weeks went back to his profession, until the following spring when he again declined. He was sent to Cuba, no good followed, and he died in a few months. The speaker believed that a residence of a year in the North Mountain region would have prolonged this valuable life. Again, a geologist resigned his duties, sought health in the field, was assigned to a government position in the Rocky Mountains. In ten days he was sleeping on the ground in the open air, at an altitude of 12,000 feet. In June the air was still raw and masses of snow lay unmelted near the camp. In November when he rode his mule into Denver the thermometer was below zero, but he returned to New York with a gain of twenty pounds of flesh. He lives today, one of the honored scientists of the land. Again, a private soldier with a diagnosis of consumption, received no special treatment, and was assigned to duty; as summer wore away he gathered strength; in autumn, after more than five months of active field service he returned with his company, rugged, hearty, with a gain of thirty-five pounds. Now, while the invalids in Colorado breathed the same air at night, they were stowed away in more or less stuffy rooms, robbed of half the benefit which should have been derived from proper protection in the open air for twenty-four hours each day. Of course, we must have a fair recuperative power left, or it can not be successful. We should have protection so as to burn up the minimum of tissue in keeping warm. He alluded to the soldiers just now leaving, tenderly reared, thrown into camp, short of food, etc., yet while one might have expected a fearful amount of sickness, the list is very small. Is it not time for us to act in accordance with what we are shown; let all invalids have the open air, with proper protection, etc., and thus save many valuable lives for years. The pine woods of Minnesota have lost much of their value since the loss of the covering of timber. Pneumonia is more common; tuberculosis also, thus showing how guilty we are. Remember that pure open air is the important need. Summing up, the State highlands show a small percentage of tuberculosis as compared with other regions. They are in a large measure unfit for remunerative agriculture; are mostly stripped of the timber, the only crop for which they are fitted. Fires have destroyed the young timber. The soil is reverting to a desert condition on which no crop can be grown, even of trees, except at great expense. In the near future they will be a source of injury to the commonwealth. They diminish the productiveness of the soil by removal of the moisture, and increase the virulence of disease germs by concentrating them in a smaller volume of diluent. The State must assume control. Such areas would become the home of natural sanitariums, and nearer home than the Adirondacks. The fact does not appear to be recognized that there is an almost continuous belt from Pike to Forest county, with an altitude of 1200 to 2300 feet above the sea level, and one may find in it during the summer a temperature seldom above 80 degrees, and at night one may sleep with comfort under blankets. Again, while in the East the coast people suffer from east winds, these regions enjoy a more seasonable and comfortable climate. There re-

mains one point. Lord Kelvin, the scientist of England, called attention to the subject, "Is the Air giving out?" He thinks the oxygen is depleted beyond the power of plants to replace it. While at the same time plants are being destroyed, every forest destroyed is an oxygen factory destroyed. There is great pertinency in this point. In the near future our supplies of water must be changed all over the country. The wells are affected by disease germs. We will be compelled to go to the fountain head for water; but if we continue to destroy our trees the sources will be lost or greatly diminished. A mile square of surface will give to the sun in July not less than 3,229,304 gallons of water. If this amount could be saved, if we simply kept the fire off the ground, allowed the soil to cover itself with timber again, we could save this. Remember the average citizen is not fit to control the conditions upon which the water-supply depends, so we must ask the Government to give us such legislation as will enable it to be controlled. Delay is costly. We must act at once. Neglect a little longer and we can never reclaim the lands thus denuded. From just such unproductive highlands the German government is now deriving a large part of its income, by the production of timber. But this is not all. In the Black Forest a German student will spend a whole vacation gaining health, strength and knowledge, for a smaller sum than one of us will spend in a fortnight in one of the ordinary Adirondack resting places. So it might be here. But the wholesome life of the German forest villager or student at present finds little encouragement on desolated hillsides. We owe it to the future that this condition of affairs be changed; that the diminished volume of our streams in summer be restored to proper size; that 6000 miles of the area of our commonwealth be changed from areas of evaporation to become water-retaining surfaces, because the agricultural world is fast coming to the conclusion that the certain growth of crops will soon force the need of irrigation upon us here. Further, we need that these areas be made productive of forest wealth for our industries, and health for our ailing citizens. We have a right to demand that an end shall be put to the annual scourges of fire which turn to smoke and ashes the wealth of the State and the property of its people. We may confidently hope that the law will intervene and prevent that misuse of natural resources in soil upon which depend so largely the life and strength of the State itself.

PRACTICAL NOTES.

Essential Asthma Cured by Compressing the Pneumogastric.—Encouraged by his success in arresting paroxysms of coughing in pertussis by compression of the pneumogastric in the cervical region, as already mentioned in the JOURNAL, Miranda has accomplished the same results in severe attacks of asthma in subjects with pronounced neuro-arthritism. The patient himself or his family are easily instructed how to perform the compression. He reports four cases thus treated and cured; in each the nervous element predominated.—*Semaine Méd.*, May 18.

Dry Dermatitis.—According to the *Pennsylvania Medical Journal*, the toxic principle of poison ivy (Rhus radicans, L.) is non-volatile and, on the authority of Dr. Franz Pfaff of Harvard University, a fixed oil, which he has named toxicodendral. Alcohol dissolves it readily and alkalies readily saponify it, but the best of all applications is an alcoholic solution of lead acetate. Other popular remedies, *e. g.*, fluid extract of grindelia or serpentaria, doubtless depend upon the alcohol which they contain. An objection of the *Medical World* is that local applications of alcohol alone do not suffice without the grindelia or serpentaria, and a preference is given to the sweet spirits of niter full strength or diluted one-half.

Weiss's Treatment of Cephalalgia.—Weiss has endeavored to investigate this subject in the light of personal experiments and of physiologic review of the anatomy of the brain. He said it was usual to divide cephalalgia into angiospastic and angioparalytic, often described by Benedict as hyperesthesia of the scalp and cranial bones where lightning and hammering pains were present. These symptoms were usually associated with an irritation of the sympathetic, and most of our therapeutics have been directed to a modification of the circulation in the brain. Here and there electricity may relieve the pain, but compression on the carotid was without the expected relief. He was now of opinion that compression of the aorta in the abdomen between the xiphoid process and the umbilicus immediately removed the cephalalgia, which it had successfully done in twenty-three cases. On a former occasion he had described the action of this abdominal compression as being transmitted through the sympathetic, but he was now of the opinion that the compression of the aorta, acting on the blood supply, was the principal factor in the phenomena. These observations require further elaboration, as the pain in the head is only temporarily affected, and not cured.

Invariable Presence of Pneumococci on the Surface of the Tonsil.—Bezancon and Griffon have laid before the Paris Hospitals Medical Society the results of some researches which they had made on the presence of the pneumococcus on the surface of the tonsil. In place of using inoculations *en masse*, after the method of Netter, they employed a culture-medium specially fitted for the pneumococcus, namely, the serum of a young rabbit. It is generally admitted that the pneumococcus can be found in the throats of healthy individuals about once in five times, but according to these observers this is a wrong proportion and due to faulty technique in the examination. The pneumococcus may exist constantly as a saprophyte in the same way as the streptococcus. If up to now the pneumococcus has not been found in more than a fifth of the cases examined it is easily explained by an alteration in the method of cultivation, the method of culture being for choice by taking some of the tonsillar mucus and not simply the saliva. The forty individuals examined by them were of varying ages and kinds, quite young children, adults, old men, some taken from a hospital atmosphere, some from laboratories and some living under circumstances from which any source of contamination could be reasonably excluded. In none of these patients was there any history of pneumonia. The only conclusion which can be drawn from these facts is that its organism is found in a great variety of diseases.—*Lancet*, April 30.

Hints for Asepsis; Gloves and Hoods.—Avoid all contact with septic things. Use scissors and forceps in removing dressings, never the fingers, and always moisten them beforehand with warm salt solution, preventing infection of the fingers with dry floating particles. If the fingers must be used, rub them well with vaselin and cleanse and disinfect them at once afterward. Operate dry. Have the instruments lying ready on dry aseptic cloth, after having been boiled in soda solution. If they become smeared with blood it is not necessary to remove it unless it interferes with the operation, when they should be laid a few moments in boiling soda solution, which should always be at hand. The above suggestions are from an article in the *Münch. med. Woch.* of May 10, by Berndt, who adds that aseptic silk thread is less harmful to the tissues than antiseptic, as its injury is only mechanical. Vulpius, in the same number, asserts that he considers the Lisle thread gloves of great assistance in securing asepsis during operations which are not liable to be flooded with blood, as the gloves keep the hands sterile as long as they are dry. They are especially useful in orthopedic operations on the extremities. He also uses a hood or capote, with no opening except for the eyes, for all operations, except very long ones (when they would become oppressive), calling attention to the "rain of bacteria" that follows the accidental brushing of the operator's head against that of an assistant. Still another precaution is the covering of the surface around the field of operation with an impermeable cloth before laying the sterile compresses around to wall off the field. He has found that if these sterile compresses become moistened with dripping water or blood during the operation they suck up germs from the skin beneath, which is prevented by the impermeable covering.

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SATURDAY, JUNE 25, 1898.

STENOSIS AND OBLITERATION OF THE AORTA IN THE VICINITY OF THE DUCTUS BOTALLI.

EMIL WADSTEIN [1] has collected 113 cases of stenosis and obliteration of the aorta in the vicinity of the ductus Botalli; of these five are new cases. Ten of the total number are purely clinical cases, in which the diagnosis has not been confirmed by postmortem examination. In order to obtain a clear notion of the normal conditions, so as to be able to differentiate between a physiologic and pathologic narrowing of the place in question, the author also examined the aorta of 105 children, whose ages varied from newborn to three years.

With respect to the pathologic anatomy of this condition, then narrowing may occur in all possible degrees to atresia, which was present in twenty of the cases. The maximum degree of narrowing was found to be situated above the duct of Botalli in 16.4 per cent.; at the point of the duct in 38.8 per cent., and below in 44.8 per cent. Occasionally the narrowing may be double. The microscopic examination in one case showed the following changes in the wall of the aorta:

Both intima and media were very considerably thickened at the point of stenosis, and at the same time there was considerable disturbance in the normal histological structure, consisting in a thickening of the innermost layers of the intima, together with the presence of occasional bundles of connective tissue, which passed directly through the membrane. The media contained a larger number of smooth muscle cells, which formed a ring immediately underneath the intima and directly opposite the narrowest point of the stenosis.

Arterio-sclerosis of the aorta occurs in about every third case of stenosis. The average age of the patients in these cases of arterio-sclerosis was found to be only 35.7 years; in two cases the age was only 17 years; in three cases 19 years, etc. Arterio-sclerotic processes are most pronounced proximal to the stenosis in the majority of cases; then directly opposite the greatest point of narrowing; and least often distal to the stenosis. The author looks upon this distribution of the arterio-sclerosis as favoring the view that it depends upon increased arterial pressure. Both the ascending aorta and the arch were often found dilated, frequently in a circumscribed aneurysmal form. In some cases rupture had occurred, and in the majority of cases of rupture dissecting aneurysms had formed.

Of the remaining anatomic changes the most important are, hypertrophy of the heart, especially of the left ventricle, and an enormously and well-marked development of the collateral channels between the vessels upon the proximal and distal sides of the narrowed part of the aorta. The vessels which undergo dilatation for the purpose of furnishing collateral circulation are, on the one side the subclavian and axillary arteries and their branches, and on the other side the intercostals, superior epigastric, deep epigastric, and possibly also the phrenic. The blood reaches the lower half of the body by way of three principal routes: 1. Through the abdominal aorta by way of the intercostal arteries; 2, through the superficial epigastric and long thoracic on one side and the deep epigastric on the other; 3, from anastomoses through the intercostal arteries and the ilio-lumbar and circumflex iliac arteries. From the clinical standpoint it may be stated, that stenosis and obliteration of the aorta in childhood produce symptoms in but a small number of cases, and these symptoms resemble as a rule those of congenital heart disease. As a general statement, it is said that from about one to one and a half years before death some acute disease develops and in a comparatively short time the symptoms of incompetency of the heart present themselves and death results from heart failure or some intercurrent disease. The average duration of life of these patients lies between 31 and 32 years, but sixteen reached 40, twelve 50, and one lived to be 92. The principal diagnostic points are: The demonstration of dilated collateral channels; distinct differences in the pulse of those arteries which arise proximal and distal to the stenosis or obliteration, especially the retardation of the pulse in the distal arteries, and third, the disturbance of the heart's action.

Finally, the author presents a quite complete summary of the theories which have been advanced to explain the pathogenesis of the changes under consideration. He concludes that the different theories show very well how little in reality is known concern-

[1] Om stenos och obliteration af aorta vid eller i närheten af ductus Botalli, Lund, 1898.

ing the final cause of this condition. He therefore calls attention to the fact that at present almost all that can be said is to emphasize the possibility that the aorta, in a certain percentage of individuals, becomes narrowed on account of contraction of newly formed connective tissue in the wall, and that this formation of new connective tissue develops because the proliferation which leads to the obliteration of the ductus Botalli extends into the walls of the aorta. As regards the case which the author examined microscopically he assumes that the stenosis in this instance developed from some congenital abnormality in the arrangement of the various structures of the artery.

THE RATION OF THE VOLUNTEER SOLDIER.

Last week we referred to some of the difficulties experienced by the Army Medical Department in organizing for field service. Today we purpose discussing the causes which have brought the Subsistence Department of the Army under criticism, because if our medical brethren in the field have a correct understanding of these causes they can do much to remove them and promote the comfort and well-being of the men in their commands.

According to newspaper reports from the various camps of our Volunteer Army many of the regiments are suffering from want of food; and acting on these reports the good people of the home localities have expressed groceries by the carload to supplement the reported insufficiency of the Army ration, while the Government has been criticised severely for its failure to provide needful subsistence to the men who have volunteered to fight their country's battles. Besides this, the belief is generally prevalent that the army ration consists essentially of hard bread, bacon and coffee, and that, as fixed by law or regulations, it does not vary amid the snows of Alaska or on the sands of the Gulf Coast. Medical men, and particularly those interested in food and dietaries and in the current work of the Agricultural Department, as published in bulletins from the office of its experiment stations, find a difficulty in believing this, as it implies an ignorance of the first principles of dietetics on the part of those who are charged with the duty of providing subsistence for the Army. Nevertheless, we understand that enthusiastic students of the physiology of food have been so far misled by current reports as to volunteer to set the Department straight on this subject, by calculating for it the calorific value of certain rations, by showing which are the dietaries suitable for soldiers in a tropical climate, and above all by explaining the absolute necessity for a vegetable constituent, to prevent deterioration of physique by an insidiously developed scorbutic taint. A little consideration given to the condition of our Regular Army during the past twenty or thirty years should have demonstrated to these enthusiasts that the army ration is an efficient ration, irrespective of any question as to the proper appreciation by our subsistence officers of the subjects of calories, hydrocarbons, carbohydrates, albuminoids and antiscorbutics, for where can be found a heartier and better fed set of men than is to be found in the companies of any regiment of the Regular Army of the United States?

The army ration, and by ration is meant the daily regulation allowance of food for one soldier, does indeed consist of a prescribed quantity of certain specified articles of food, but the soldier is not understood in every instance to eat it. If he does not use it he is credited with its market value. The men mess by companies, and if a company does not use the whole of the hard bread, bacon, coffee, etc., to which it is entitled, the money value of the unused parts of the ration is available for the purchase of articles to vary the diet. And that the full purchasing power of this money may be obtained by the company, the Subsistence Department keeps on hand, for sale at wholesale prices, most of the articles of food that are to be found in our city grocery stores. At the present time, the subsistence officer of each of our large camps has on hand an ample supply, not only of the staples of the regulation ration, but of the articles which may be purchased in place of them. No complaint of a deficient dietary has come from any of the regular regiments, although they are subject to the same ration and regulation as the Volunteers; yet from the latter come so many complaints of the inadequacy of the governmental ration that the representatives in Congress of various regiments have appealed to the War Department for a change in the methods. This has led, at Camp Alger, near Washington, D. C., to the issuance of a circular by the Chief Subsistence Officer of the 2nd Army Corps:

"It having been reported at these headquarters that certain regiments of this command have received no fresh beef or fresh bread, the attention of officers on duty as commissaries of the various regiments is called to the fact that there is to be found absolutely no excuse for this condition of affairs. Fresh beef, fresh bread and fresh vegetables are and have been issued regularly by the depot commissary at Dunn Loring station to every regiment making proper requisition therefor, and if any regiment has not received them the fault and the remedy are to be found in its own officers.

"Commissaries are reminded that it is their duty not merely to receive such supplies as may be furnished them, but to see that the men of their organizations receive to the full extent all to which they are entitled. And the fact that any regiment in this command, with ample supplies and facilities for distribution now at hand, should day after day be deprived of proper food, implies a clear neglect of duty on the part of the responsible officer of that regiment."

The Chief Subsistence Officer in this case throws the blame on the regimental commissaries of subsistence; but the duty of the latter is to provide, if possible, what is called for by the companies. It is true each regimental commissary could do a great deal to remedy existing evils by teaching company officers their rights, privileges and duties in this matter; but as a rule he is as ignorant of these as the company officers themselves. The company commander is the

individual responsible for the rationing of his men, to which and the subsequent preparation of the food he is required by Regulations to give as much personal care and consideration as will insure a plentiful and varied diet. Very few of the company officers of our Volunteer Army understand this. They devote their energies to drills and tactical work and leave to "the Government" the duty of supplying their men with food.

As sanitary officers medical officers have a concern in these matters. They are required by Regulations to examine . . . the character and cooking of the food and to make such recommendations as may seem to them to be of value. They have therefore the right to interfere and urge upon officers of the line that proper care be given to the rationing of the men, confident that with such care there would be no more complaint of a deficient dietary.

THE "BUGABOO OF THE MAD DOG."

The fact that there is such a disorder as canine rabies has been so long accepted by the medical profession that the other fact, made rather manifest within a year or two past, that there are some respectable physicians who doubt its existence seems at first sight unreasonable, if not absurd. Certainly the burden of proof lies on those who thus contest one of the established beliefs not only of medicine but of the general public from all time past, and it ought to require more than ordinary evidence to overthrow it. It may be admitted that it is a rare disease of the human species, in this country at least, and that its conventional syndrome is often counterfeited by nervous and hysteric subjects, even to the extent of carrying them to a fatal termination, without the actual infection having ever been in play, but these are by no means conclusive that such infection is a myth and that there is really no such disorder. The existence of a pseudo-rabies does not exclude a genuine form any more than does a pseudo-syphilis, and the mere fact of the comparative rarity of an affection is no argument against its occurrence, when that is attested not only by history and experienced observation but also by scientific control inoculations and other tests. There have been too many cases thoroughly observed and reported to make the skepticism that some profess, appear even reasonable, though it may be allowed as evidence of mental idiosyncracy that when confined to purely professional discussions is harmless if not altogether admirable. The importance of prophylaxis in this disorder, however, is such, that if such views were likely to be generally adopted mischief might result, and this possibility is the more serious when statements are made in the lay journals by popular writers that there is no such disease as hydrophobia and that the reported cases are "in reality nothing more nor less than instances of people who have been bitten by dogs and frightened into hysteric conditions in which they involuntarily reproduce all the supposed symptoms of hydrophobia," that the public, and especially the nervous and impressible portion of it, "should believe that there is no such thing as 'hydrophobia'" and rid themselves of the "bugaboo of the mad dog." There is perhaps not much probability of the popular faith in the existence of this disorder being destroyed, but it is more than questionable whether, on hygienic grounds, the medical profession ought to let such misleading statements go unheeded. Certainly they should not if they are accepted by any considerable portion of the public and acted upon accordingly. Such a course would very possibly cure itself in time by furnishing some indubitable examples of the disease that would have been avoided under the ordinary conditions and the heretofore accepted popular beliefs, but this is not a desirable outcome, of itself, and would be better avoided. The fact that the disease is rare in man, in this country, is largely due to the popular apprehension, and the precautions thus induced. It gives rise no doubt to a slaughter of the innocents that the philozoists may deprecate, but this is probably unavoidable until there shall exist some higher degree of public enlightenment and a more thorough and rational system of sanitary police. If at present a salutary fear of hydrophobia may cause hasty and indiscriminate extirpation of dogs, at certain times, and especially when one of the periodic hydrophobia panics exists, there is still reason to consider the results as not altogether evil. A superabundance of dogs is responsible for other evils than merely those of hydrophobia, and an occasional reduction of their number may be considered as a sanitary measure.

While it may be admitted that rabies, either canine or human, is not so common in this country, this is not the case in some other parts of the world. In Russia it is said to be much more frequent and the Eskimos know it and dread it and consider a winter distemper which is often very fatal amongst their dogs as a modified form of the disease. PASTEUR analyzed over five hundred authentic cases in France and his authority will not be easily overthrown by those who, working with much more limited data, are so free with their deductions and criticisms, and insinuate, if not openly charge, that well attested and reported cases are simply "laboratory hydrophobia." A single well supported case would be sufficient to riddle the denials of the existence of the disease if not to fully establish its existence, and we have now probably hundreds confirmed by control experiments upon animals in which imagination and hysteria can be absolutely excluded. From a point of view of admissible medical evidence the question would appear to be fairly settled, so far as the present available data are concerned, in favor of the existence of the disease.

So long as an occasional case occurs and is recorded in the public prints it is not likely that the popular belief in the reality of hydrophobia will become altogether extinct, in spite of all that may be said by those who disbelieve. It will be a misfortune, however, if popular writers, who are always ready to take up and vulgarize medical heresies, should succeed in creating any degree of false security that might lessen the necessary precautions against rabies. With such a disorder prophylaxis is a necessity and any error had better be on the safe side.

FOR THE AID AND COMFORT OF SUFFERING SOLDIERS.

To form an opinion from present indications there will be little need during the war with Spain for this country to call for the Red-Cross assistance of other nations through the medium of our membership in the International Society. The American National Red-Cross, Miss CLARA BARTON, President, has, we understand, given formal notice to the Departments of State, War and Navy and to the Surgeons-General of the Army and Navy of its readiness to respond to any call for civil aid to supplement the hospital work of the Army and Navy; and in powerful support of this the New York Red Cross Relief Committee has given official notice that it stands ready to furnish all necessary money and material to carry on the work. The American National Red Cross is thus ready if called upon not only to give aid and comfort to suffering soldiers in the general hospitals but to reinforce the Medical Department of the Army with volunteer nurses and supplies on the field of battle.

It seems, however, as if the resources of the Government and the patriotism of individuals and associations outside of the National Red Cross would render unnecessary any participation by the latter in hospital or field work. The organization of a special hospital corps, which the Army did not have during the last war, enables the Medical Department at the present time to care for the wounded on the field without volunteer assistance; and appropriations by Congress have provided for all the essential requirements of the general hospitals. There remains to be supplied to the latter only such articles as must be regarded in the light of delicacies or luxuries, and these the patriotism of the country appears to be forcing upon the Medical Department without waiting for any official call in this regard. War had hardly been declared when a National Relief Commission was organized in Philadelphia and propositions relating to organizing for relief work were heard in Illinois, in New York and many other States. So many inquiries were made by Chapters of the Daughters of the American Revolution Departments of the Woman's Relief Corps of the Grand Army and by individuals in various parts of the country concerning the supplies that would be most acceptable that Surgeon-General STERNBERG had to publish a memorandum to be used as a reply. This opened the way and since then money and supplies have been received not only by the general hospitals but by field division hospitals. Among the larger checks received was one for $1000 from the National Society of the Colonial Dames of America, for the use of the hospital at Key West, Florida, and a second for $500 for use elsewhere; the Colonial Dames of New York sent $500 for the use of the Hospital Ship *Relief*.

Thus for the present and the immediate future the competency of the legalized organization of the Army Medical Department and these voluntary offerings obviate any need for formal assistance from the American National Red Cross; but, should the war be protracted and exhausting, organized assistance such as may be available under its auspices will be of great value to the sick and wounded.

DELAY IN PUBLICATION OF MINUTES.

We extremely regret that we have not been able to obtain the resolutions adopted at the Meeting from the Secretary of the Business Committee, Doctor BULKLEY, up to this time; consequently the ASSOCIATION must wait the convenience of Doctor BULKLEY before the complete minutes can be produced. The only person however to whom the JOURNAL can look for official papers is the Permanent Secretary. If that officer allows important resolutions to leave his hands, he must take the responsibility. He should see to it that the intense desire of the *Business* Committee to conduct the affairs of the ASSOCIATION, does not lead its managers to suppress the minutes altogether. For the first time since the JOURNAL was founded, the proceedings have failed to be printed in the current volume.

CORRESPONDENCE.

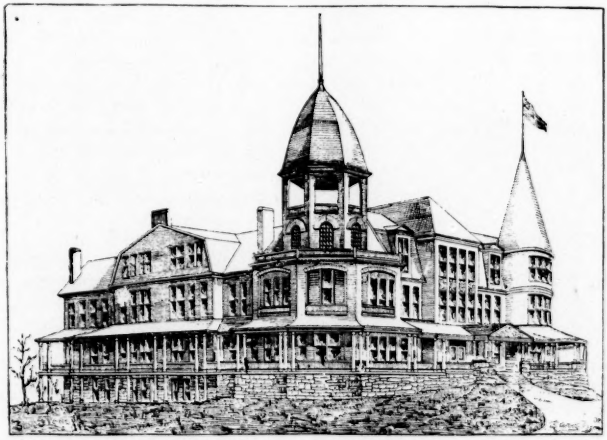
WAR CORRESPONDENCE.

BY LIEUT.-COL. NICHOLAS SENN, U. S. VOLS.,
CHIEF SURGEON SIXTH ARMY CORPS.

CHICKAMAUGA, June 3, 1898.

Chickamauga! What a terrible name to the reunited nation! Here was enacted one of the bloodiest dramas in American history. It is here where one of the most desperate battles of the War of the Rebellion was fought. Almost every foot of soil of this great National Park was stained with the blood of heroes on both sides. What a grand spectacle this beautiful park must have presented when it was the scene of one of the greatest battles known to history! Two great armies composed of the same flesh and blood, face to face, engaged in a deadly conflict. Upon the issue depended much on both sides, hence the heroism displayed and the terrible sacrifice of life. It seems to me I can hear now the beat of the drum, the shrill voice of the fife, the thundering roar of cannon, the rattle of musketry, the shouts of command, the groans of the wounded and the labored breathing of the dying. The bullet-riddled trees, the innumerable cannon occupying the same position as when they vomited forth fire, death and destruction, the many beautiful monuments and tablets commemorating the position of troops during action, and the places where distinguished leaders fell,

are the silent witnesses of those awful days when our Nation was threatened by disruption and even death. It was no fault of our valiant enemy that the star spangled banner triumphed. The victory was dearly bought. Thousands of brave soldiers are resting in yonder cemetery. Many wounds inflicted still remain. Many an aged mother and father have had their life saddened by an irreparable loss sustained in that battle. Many an empty chair has remained in numerous lonely households. It will take more than another generation to wipe out the immediate consequences of the horrors of that battle. Let the present and all coming generations remember with veneration and true gratitude the heroic deeds enacted here. Years have gone by and this great park has become again the camping ground of a large army. Within a few weeks nearly fifty thousand men have pitched their tents and are making active preparations for war. The hills, fields, woods and ravines are swarming with soldiers. Mounted officers are galloping in all directions in clouds of dust. Brigades, regiments, companies and squads are hard at drill under the burning sun. Sentries are stationed everywhere to preserve order, protect property and learn the art of watch dogs to protect the troops during the active campaign along the coast and in distant islands, the the prospective fields of warfare. Almost every day new regi-



LEITER HOSPITAL, CHICKAMAUGA, GA.

ments arrive from every part of the country, often without arms and uniforms, but eager and ready to be instructed in the art of war. Our patriotic citizen soldiers in civilian dress envy their more fortunate comrades in showy blue, and impatiently await their turn to don the soldier's garb. It is refreshing and interesting to observe what patriotism will do in antagonizing the imperfections and hardships of camp life. Do you imagine you could hire many of these soldiers to do ordinary work under similar conditions at $5 per day? No! Give them a uniform, a gun, and an opportunity to fight for the honor of their country and the glorious stars and stripes, and they rush to the front without a word of complaint, unconscious of the privations and hardships incident to the life of the soldier.

SANITARY CONDITIONS.

Chickamauga Park is admirably adapted for a large camp. It embraces several square miles. The forest trees furnish protection against the burning rays of the semitropical sun and the many open places and fields are utilized as drill grounds. Humus is scanty and the subsoil is of clay. The surface is somewhat undulating and is cut up here and there by ravines, which add much to the beauty of the scenery. An ample supply of pure water is obtained from numerous wells, from 15 to 65 feet in depth, recently supplemented by a pumping station which derives the water from the river, a short distance below Crawfish Springs, and distributes the water to different parts of the park through iron pipes. The vastness of the grounds are realized by the visitor as soon as he reaches George H. Thomas camp, which at the present time is occupied by nearly 50,000 men, and yet seldom more than one regiment can be seen at one and the same time. In the past, Chickamauga has had an unenviable reputation as a health resort. The Indian name Chickamauga signifies literally "River of death." Along the banks of the Chickamauga river, which flows through the park, malaria was very prevalent years ago, which probably had something to do in inducing the Indians to designate this river by such a terrifying name. At the present time malaria has nearly disappeared from this part of the country, except a very localized district north of Crawfish Springs. The malaria contracted in this circumscribed locality has been of a mild form and is probably due to the draining of a little pond on the south side of Park Hotel.

An adequate number of sinks from four to eight feet in depth have been dug a safe distance from tents and field hospitals, all of which are boarded in. Three times a day the deposits in the sinks are covered with dry earth and ashes from the stoves and camp fires. One of the difficulties so constantly prevailing in camps has been the introduction of harmful articles of diet by interested friends and enterprising merchants. The regulations governing this evil are becoming more and more stringent and are more effectively carried out, so that the danger from this source is diminishing progressively.

PREVAILING CAMP DISEASES.

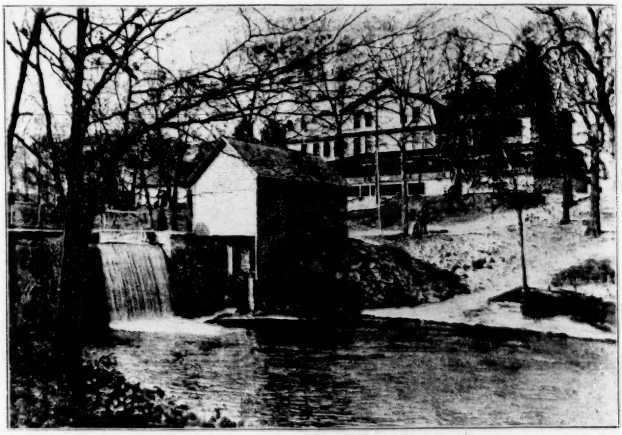
The most common disease affecting the troops at this time is diarrhea. The continuous heat, the change and often imprudence in diet and sleeping on the ground are the most important etiologic elements. The last mentioned cause becomes apparent from the fact that the privates are much more frequently affected proportionately than the commissioned officers, most of whom enjoy the luxury of a cot. A number of deaths have occurred from cerebro-spinal meningitis, more especially among the Illinois troops. In my first communication I traced the disease to Camp Tanner, where it originated from a case

brought there by the first regiment of cavalry. A few days ago Capt. Lemke, 3rd Regiment Illinois Volunteers, made a postmortem examination at the 1st Division Hospital, 1st Army Corps, which demonstrated the pathological appearances of the disease to perfection. There was a difference of opinion in reference to the location and nature of the disease, as during the early history of the case the symptoms referable to the cerebro-spinal centers were conspicuous, while later a complicating pneumonia masked the manifestations of the original disease. The examination showed croupous pneumonia involving one lobe of the lung, of recent origin, while the meninges of the brain and spinal cord presented all the evidences of an acute inflammation. The lining membranes of all the ventricles were involved. The pathological changes were most marked at the base of the brain and more especially the pons Varolii and medulla oblongata. In these localities the meninges were found infiltrated and covered with a plastic exudate.

The remaining portions of the membranes enveloping the brain and cord were extremely vascular and in some places presented an opalescent appearance. A considerable quantity of turbid serum was found in the ventricles and subarachnoid space. It was evident from the postmortem appearances that the primary disease involved the nervous centers and that the lobar pneumonia set in later as a complication and contributed toward an early fatal termination. Two cases of cerebro-spinal meningitis, presenting grave symptoms observed in Camp Tanner, improved promptly after lumbar puncture and I have been subsequently informed that both of these cases ultimately recovered. The first tapping was made by Lieut. Rowe of the 1st Illinois Cavalry. All cases of cerebro-spinal meningitis that have been sent to the Division Hospital have been placed in isolation tents for the purpose of preventing further spread of the disease. Measles has broken out in the camp and all patients suffering from this disease, about twenty in number, at the present time are under guard in isolation tents. The disease is mild in type, the patients as a rule being confined to bed not longer than four or five days. Pneumonia has been prevalent, especially among the regiments from the northern States. Delirium is usually absent although the disease otherwise has assumed a grave type. In several fatal cases the postmortem changes indicated that death resulted from secondary streptococcus infection. At the present time there are only three or four cases of typhoid fever in camp and in most of them it is more than probable that the disease was contracted before the patients reached the camp. Considering the inadequate clothing of many of the volunteers, the heavy dew and the chilliness experienced some nights, it is remarkable that so few suffer from rheumatism and bronchitis. Sunstroke and heat exhaustion have so far not visited the camp, although heavy marching and active drilling often take place with the sun high up in the horizon. On the whole the health of the troops is excellent.

A TIMELY BENEFACTRESS.

As soon as I arrived at Camp George H. Thomas I called on Lieut. Col. Hartsuff, U. S. A., who received me very kindly and spent nearly half a day in showing me the location of regiments and field hospitals. His experience since he took charge of the medical affairs of the camp had taught him that the hospital facilities even with the limited number of sick at the present time were entirely inadequate. Near the park and on the south side of it, adjacent to the famous Crawford Springs is a large well built hotel containing seventy rooms, which had recently been evacuated and on which he had an option for a few days, purchase price $10,000. The building alone cost $65,000 and as the purchase price included the entire furniture, water privilege and four acres of land, and the building was in a condition that it could be occupied at once without much repair he had strongly recommended its purchase for hospital purposes to the Surgeon-General. There was no question as to the desirability of acquiring the property to better and increase the hospital facilities; neither could there be any doubt of the government's willingness to buy it to meet the existing emergency, but past experience satisfied all concerned that it would take weeks, and perhaps months, before the building could be made available by relying on the routine way in acquiring the property. Recognizing the necessity for immediate action in the premises and the fact that the option was open only for a few days, at the expiration of which the owners intended to reopen the hotel, I asked permission of Col. Hartsuff to allow me to make an attempt to secure the building by donation and later present it to the Government. This request was willingly granted. I telegraphed to Mrs. L. Z. Leiter, Washington, D. C., the condition of affairs and in due time received the pleasing information by wire from her husband that I should proceed at once and draw on him for the amount. After overcoming some of the technical difficulties in the way of securing the necessary water-supply from the adjacent Crawfish Springs, the purchase was made and the



CRAWFISH SPRINGS AND LEITER HOSPITAL.

"Leiter Hospital" has become a beautiful monument to the memory of a distinguished family that has given the first large donation for the benefit of our sick citizen soldiers at the very beginning of the Spanish-American war. May this noble example find many imitators!

Medical Missionary Work in China.

SIOUX CITY, IOWA, June 13, 1898.

To the Editor:—I am advised by Dr. Senn, Chief Surgeon of the Sixth Army Corps, to bring to your notice a needy case in the hope of securing aid.

Dr. I. J. Atwood of Fen Cho fu, China, a graduate of Rush Medical College, has established a hospital, dispensary and opium refuge as a part of his mission work in Fen Cho fu, where much good work has been done in spite of inadequate room and poor equipment. I might tell of many interesting cases which have come under his care.

He has, at last, succeeded in overcoming Chinese prejudice against amputation, but please read the enclosed extract from a recent letter of his and learn the difficulties with which he has to contend.

Is there not some surgeon among your readers who has a second best case of surgical instruments he would like to donate to the hospital?

Dr. Atwood's work is under the American Board of Foreign Missions.

Hoping to secure the interest of your readers and the instruments so much needed in Fen Cho fu Hospital,

I am very sincerely yours,

MARY A. ATWOOD.

P. S.—The address of Dr. I. J. Atwood is Tientsin, China.

EXTRACT FROM A LETTER FROM DR. I. J. ATWOOD A MEDICAL MISSIONARY IN FEN CHO FU, CHINA.

The work of the opium refuge and hospital has been going on as usual, and most of the converts have come in through these channels. One man and his wife have just been taken in. She came into the hospital in a most wretched condition, opium and microbes had done all they could for her. Her bedding was one mat of slime and filth; her face as black as a coal-heaver's; her skin was wrinkled and the cords and veins stood out like whip-cords on her bony, almost skeleton body, while a child of two years old clung to her skinny breasts, trying to get sustenance. To complete her misery, a cancer extending to the bone on either side of one foot kept her from sleeping nights with excruciating pain. The first thing to do was to leave off opium, and if the "torments of the damned" are any worse than what she suffered, they are indeed indescribable. She would sit upright and sew all night long, to make the night tolerable. In this she showed great determination. When the opium chains were loose the poor body was built up with Mellin's food and milk. Then came the ordeal of amputating the leg just below the knee, for the cancer was spreading, and was more painful than ever since the opium was gotten rid of. *The station does not possess an amputating case*, so a saw was made of a piece of band-iron from one of our Boston boxes, with a frame to hold it, and with this saw and a finger knife the leg was amputated. She did well in spite of microbes, and now her face is round and healthy, and so is that of her child, for the milk returned, and the family is happy. They were both very attentive to the Truth, and have accepted it gladly, and have asked to be taken into the church. Their names were taken on probation.

Well, we have gone over another Chinese new year, and are cleaning out the hospital and refuge for a new lot. They will soon be on hand in increasing numbers. Sunday, while we were at meeting, a boy about 14 years old was brought in with one femur broken in four pieces! He had fallen off the city wall, where it is the custom to go on the 15th or 16th day of the new year to escape sickness for a year! It is supposed that a stroll on top of the city wall at that time will so attract the propitious influences that one may get immunity from diseases for a year.

Epidemic of Tonsillitis.

HOGANSVILLE, GA., May, 1898.

To the Editor:—An epidemic of tonsillitis appeared in our village and vicinity, July 1, terminating Dec. 1, 1897.

Case 1.—Roy P., white, age nine years. Upon examination I found both tonsils congested, and the size of a full-grown almond; tongue thickly covered with a lemon-colored fur, from the base to the tip. On the second day, on left tonsil, one ulcer one-fourth of an inch in length, from above downward, by one-eighth of an inch in width antero-posteriorly, made its appearance notwithstanding the use of strong astringents locally as a gargle, and the internal administration of mild mercurous chlorid in one-quarter grain doses every hour until six grains had been given; cauterized with molded nitrate of silver. The third day a similar ulcer formed upon the right tonsil; treatment was the same, with nitrate of silver. The fourth day both ulcers were covered with thin, tenacious white mucus, which was removed, applying the nitrate of silver freely to the ulcer and tonsils, followed twenty-four hours later with a mild astringent gargle.

Not at any period during the attack did the temperature rise above 102 degrees. Recovery was rapid.

During the five months sixty-five cases were under treatment of both sexes, white and negroes, of all ages between three and fifty years, two-thirds of whom were white. All recovered except one white child, a female, six years old, whose death was caused by hemorrhage from the left tonsil sloughing away completely on the ninth day.

A peculiarity of the epidemic was that all children in the families were attacked, except infants under one year, who proved to be immunes, as none were isolated, one infant of three months remaining continually in the room, day and night with her sister, the case that terminated fatally.

R. H. JENKINS, M.D.

Popular Physiology.

RYAN, IOWA, June 17, 1898.

To the Editor:—The following clipping from the Lincoln (Neb.) *Journal* is a rather peculiar specimen of popular physiology:

"The windpipe was partially severed, and the sufferer could only breathe by dropping his chin close to his throat. Otherwise the air escaped through the gash instead of going into the lungs."

Sincerely yours, A. H. SCOFIELD, M.D.

ASSOCIATION NEWS.

American Medical Association.

Official Minutes of the General Sessions of the Forty-ninth Annual Meeting, held in Denver, Colo., June 7, 8, 9 and 10, 1898.

JUNE 7—FIRST GENERAL SESSION.

The Association met in the Broadway Theater at 10:30 o'clock A.M., and was called to order in the absence of President Sternberg, by the First Vice-president, Dr. Joseph M. Mathews of Louisville, Ky.

Dr. Mathews, in calling the Convention to order, said: Before opening the session I desire to read the following telegram which I have just received:

"Joseph M. Mathews, First Vice-president, American Medical Association:—Please convey to the Association my best wishes for the success of the Denver meeting, and my sincere regret that important official duties prevent me from being present, and express my heartfelt acknowledgement for the honor conferred in electing me President.

[Signed] "STERNBERG, Surgeon-General."

The message was greeted with applause.

Prayer was then offered by Chancellor W. F. McDowell of Denver.

At the conclusion of the prayer, Dr. R. Harvey Reed of Wyoming made the following motion:

In view of the telegram just received from our distinguished President, I move that our distinguished Vice-president, Dr. Mathews of Kentucky, be made President *de facto* of this meeting. Seconded.

Dr. J. N. McCormack—I rise to a point of order.

The President—Please, state your point of order.

Dr. McCormack—The President of this Association, Surgeon-general Sternberg, has not resigned his position. He is unavoidably absent on account of imperative official duties, and I do not think this motion is in order. I therefore ask a ruling from the Chair relative to this matter.

The President—I declare the motion out of order. (Applause.)

The President then introduced the Chairman of the Committee of Arrangements, Dr. J. W. Graham of Denver, who made the following remarks:

REMARKS BY DR. GRAHAM.

Dr. Graham was warmly received. He said: "Words fail to express the joy of our hearts today in greeting you one and all to our beloved city and State. We feel greatly honored that the beginning of the new half of the century in the existence of this distinguished body should begin its labors in our city of the West. It is our hope concerning the members who are passing and have passed away, the great men of this organization, that the mantle of their great power will fall on you, so that you may take up their labors and begin in our city a newer work, a greater work, that shall justify the expectations of the time, place and the age. We desire to see inaugurated in this city today the beginning of that movement which will place the medical profession where it belongs in the city of Washington. We desire to see a department of public health recognized in the cabinet of the President of the United States (applause), and we expect you to take such action today as will request and, if needs be, compel that that be done ere we meet again. (Applause.)

"In behalf of the physicians of the city of Denver and of the State of Colorado, I extend to you a most hearty welcome.

"I desire on behalf of the profession of the State to present to you at this time our distinguished Governor, the Honorable Alva Adams." (Applause.)

ADDRESS OF WELCOME BY THE GOVERNOR OF COLORADO.

Governor Adams was greeted with great applause. He spoke as follows: "Mr. Chairman, Ladies and Gentlemen: There is no convention that is more welcome to Colorado than that which is now assembled here. Profit is always a guarantee of sincerity, and by that standard you will know that in our words of greeting there is no insincerity or falsehood. We welcome you for the friendship we hold for you as an Association, and as individuals; but there is incidentally a profit and a gain that come to Colorado. Notwithstanding the vagaries and peculiarities of our climate during the last few days, I still insist that our climate is our greatest resource. (Applause.) It is of superior quality, and, as you know, infinite in variety. (Laughter.) And then we have it in unlimited quantities. It extends several hundred miles north and south, east and west, while above it is bounded only by the sunshine and the empyreum of God's heavens. While we have this climate to sell, we recognize that there are no better agents to exploit it and advertise it than the fifteen hundred intelligent physicians of America assembled here today. (Applause.) There is, however, an element of business reciprocity between you and us. While we gain through the endorsement of the doctor, we give him an asylum where he can send his hopeless and chronics. You know in the days of Shakespeare, when doctors knew not what to do, they ordered their patients to go to court so the king could touch them *à la* Schlatter. (Laughter.) Now the wise physician sends such cases to Colorado. As evidence of the curative qualities of our climate we call your attention to the thousands who come here and who are today walking the streets of our cities, strong, in vigor and in health, in every vocation of life, doing for God and man, and we may state incidentally that as you ride about our city you will note that the most magnificent residences and the finest business blocks are owned by Colorado doctors. (Laughter.) My friends, these palaces and these blocks were built out of Colorado climate. (Laughter.) Our doctors have become self-appointed agents for the collection of all royalty due to climatic cures. If you will read the prescriptions which they give out to those whom you send to us, and upon which they make fame and fortune, you will find that these prescriptions can be resolved into 90 per cent. climate, 5 per cent. aqua pura and 5 per cent. of faith and other ingredients. (Laughter.) But, my friends, aside from this incidental profit which Colorado derives from such a band of advisers as you are and must be for us, we are glad to see you as individuals, as citizens, because when physicians put aside their vocation, there is no class of men that so fitly conforms to the idea and the description of a jolly good fellow, or as royal a friend, or as fascinating and attractive as our doctors. (Applause.)

"I never could understand why Voltaire recommended the devil to beware of any acquaintance with medical men, unless he thought that his Satanic majesty was wasting his time trying to win such pure and incorruptible men. (Laughter.)

"In ancient India only the most noble of Brahmins was allowed to practice medicine. As we read the splendid faces of those who compose this Congress we can half believe that the influence of the ancient law has not been lost. Royal or not, I have always admired the regal way in which doctors ignore their own advice and rule. As I came upon the platform your secretary, Dr. Atkinson, said to me, 'Treat this audience kindly, but do not take their medicine.' (Laughter.) We know that preachers sometimes obey their own injunctions, as, for instance, like Chancellor McDowell here, but doctors never. (Laughter.) Go into their homes, you run against no rules of diet, meals, beverage, sleep; all is liberty and happiness. Perhaps they read with a clearer vision that brief but suggestive Biblical obituary, 'Asa trusted the physicians and he slept with his fathers.' (Laughter.)

"I have a book on biography and in it I noticed the record of one Dr. Wise. It says of him that he died at the age of 30 with dyspepsia. He was a noted and very learned physician, as well as the author of a valuable work entitled 'The Art of Living to an Old Age.' (Laughter.) The giant of all our physicians of Colorado was a man (Dr. Bancroft) who wrote a book to prove that no man could get fat in the Colorado climate, but we stand today upon the dawn almost of the twentieth century and progress is the watchword of the last decade of this dying century, and in no line of human effort is the spirit of advancement more manifest than in the allied profession of medicine and surgery. Medicine has done more for science, more for humanity than any other department of human effort. Medicine, so long under the shadow of suspicion and imposture, is now a great art, while surgery is the nearest divine of all human science. Every meeting of your Association reads new records of achievement. So great has been the revolution of surgical knowledge that the skill you possess today would have saved two hundred thousand lives in the Civil War. Due to the attainments of the army surgeon the young man who goes out to battle against Spain does not take one-half the hazzard his father took in the great conflict a generation ago. To operate upon the wounded now as was common then would subject the operator to trial and conviction for manslaughter. (Applause.) In your profession Americans need go to no other land or age, as our own practitioners are the best in the world. In doing good no profession has been more generous. In hospitals the poor receive courteous treatment and skill as great as the richest and most eminent can command. It has been your profession that has stayed contagion upon the borders of our land, and in times of epidemics, in times of agitation, the members of your profession have manifested a heroism and bravery equal to that of Dewey or a Hobson. (Applause.)

"The greatest physicians and surgeons the world has ever known are living today, yet in your literature you cling to the ancient fathers of your faith to typify your profession. As many cities of Greece contended for the birthplace of Æsculapius as for Homer. Bronze, marble and plaster busts of Hippocrates, Galen and other ancients decorate our colleges of medicine and surgery, and the office of the modern practitioner; yet by our standard how little they knew. All the wisdom they possessed would not permit them to practice in Colorado or secure a diploma in the poorest medical school in the land. They could not obtain a diploma in a first-class college in America. Napoleon said that Baron Larrey, the physician who followed him in his battles, was the greatest, bravest man he ever knew. When an American desires professional services of the highest character he does not have to go to a past age or to any other country, for under the stars and stripes there live today the greatest physicians and surgeons of the world. (Applause.)

"If kindness to misfortune, sacrifice for the poor, be a pass to paradise, I would rather take the chance of many a poor Dr. McClure than stand in the shoes of some of our proud millionaires. (Applause.) But with all of your ability, with all of your generosity, which is equaled only by your skill, I find that the doctors are a modest set of people. Doctors are very tolerant, indulgent and generous, unless called to consult with some one of another school. With my experience in legisla-

tive matters, and in the discussion of legislative bills which had to do with the regulation of practice and the recognition of different schools of medicine, it has given birth to a suspicion that the first fundamental principle of each school is that the others had no business to practice; that they ought to be prohibited or go to jail. Personally, my condition has much to do with my faith in schools and systems. For instance, if I feel lonesome and forsaken; if the newspapers, and politicians, and the disappointed, turn their pens, tongues and scalping knives upon me, just because I was not as wise as they would be in the conduct of my office and in making appointments, then I feel the need of the soothing, sympathetic treatment of the christian scientist or faith cure. (Laughter and applause.) Again, if I am in what you may call the loafing, novel reading degree of invalidism, when it does not hurt very bad, I call in my homeopathic friends. Their remedies seem as pleasant as their gentle touch and manners. (Laughter.) Their dissertations upon the power of atoms are as fascinating and convincing as a chapter from Tyndall or Hugh Miller. But my friends, so strong is the power of ancient usage, so strong is the memory of youth, and the influence of early training, than when I have an ache, when I feel that there is some chance of my account being called to a close, then I send for the old regular calomel doctor, and I want him quick. (Laughter and applause.)

"In conclusion, let me say that as men whose work, study and experience have been coined into victories for the race, who under the banner of an almost inspired science, have fought and won some of the greatest battles ever waged in the cause of humanity, we extend to you our gratitude and our friendship. Our homes, our cities, our State, are yours. Enjoy them as your own as long as you like." (Loud and prolonged applause.)

The President—I have the pleasure of introducing as the next speaker the Honorable W. S. McMurray, the Mayor of Denver, who will welcome the Association on behalf of the city.

ADDRESS BY MAYOR M'MURRAY.

"Mr. Chairman, Ladies and Gentlemen: After the eloquent remarks of our Governor to which you have just listened, it seems almost useless for me to add anything to the well chosen words of welcome which he has addressed to you, and still I feel that on behalf of the city of Denver, whose chief executive I have the honor to be, and within whose confines you are meeting today to hold your convention, I would be derelict in my duty did I not extend to you a word or two of sincere welcome, not only in behalf of the physicians of Denver, but of the physicians and citizens of the entire State of Colorado. (Applause.) We welcome you as individuals, as American citizens, and as physicians. We are glad to have you come and visit with us. Here in almost the center of the continent you come from the Eastern coast, from the sunset gate, and meet here under the shadow of the Rockies in the same country and under the same flag. And we are glad to welcome you as members of a divine profession, and I take especial pleasure in greeting and welcoming you on that account. Having the honor to be the oldest son of a physician, I know something of a physician's life. I had the honor of coming from that well-known Eastern city, from which so many of your representatives are here today. I refer to Philadelphia. We welcome the triumphs of your profession; we welcome the glorious possibilities that lie before your profession in the incoming century, and we know that you are constantly pressing forward and making rapid strides at these annual gatherings from year to year. You devise new plans which shall make the profession more useful, and add to the knowledge of those with whom you come in contact.

"Regarding the mistakes of the weather of the last few days, the matter is fully accounted for by the fact that the chief weather manufacturer in Washington City has been for some time neglecting his work in efforts to furnish the Naval Strategy Board the many things it needs and wants. (Laughter.)

"A word or two regarding our climate. You have heard of the man who came to Colorado with only one lung and that badly diseased. Inside of a year he wrote to his friends that he now had three lungs. (Laughter.) So, as you go through this city and State, you will doubtless meet with many people whom you would not suspect of having had lung trouble judging from their present condition.

"As you see the marvelous resources of this great Western country as you go through this beautiful city and State, you must remember that this city has been born and practically grown to the extent it has during the last forty years. As you gaze upon the vast plains and mountains of this State you will have some idea of the great possibilities of this country. Those of you who come here for the first time realize as you have never done before what a glorious heritage has been given us in this nation of ours. As you return to your homes, after having transacted your business, you will have a better idea of the people of this city and State, and of the magnitude of our resources and of the grandeur of the nation of which we are only a part. As you are here then today, we extend to you a sincere and heartfelt welcome. We ask you to go through the city; it is yours. Anything we can do for you, call upon us, and anything we can do to make your trip pleasant, ask it of us. If you do not see what you want, ask for it, is the sign you see everywhere. As you go through the city and see its resources here and there, remember that it is only a small part of this State. (Applause.)

"Permit me again to extend to you a hearty welcome. We trust your stay will be pleasant and profitable. We hope you will cultivate new acquaintances and renew old ones. It is our wish that you may be so entranced with your visit to Denver and Colorado that you will feel there is only one place upon the American continent where you can live and be satisfied, and that is under the shadow of the Rockies in this great centennial State." (Loud applause.)

The President—We deplore the fact that Surgeon-General Sternberg is not present with us today, but we are to be congratulated on the fact that he has sent his Address, and I will ask Colonel A. A. Woodhull of Denver, to read it.

Colonel Woodhull then read the Address prepared by President Sternberg, which was frequently applauded during its delivery. (See JOURNAL, p. 1373.)

At the conclusion of the Address Dr. J. L. Thompson of Indianapolis, Ind., took the Chair.

Dr. W. S. Huselton of Allegheny, Pa., offered the following resolution:

Resolved, That the following telegram be sent to Surgeon-General Sternberg:

"That while the American Medical Association in session in Denver regrets that circumstances, national in character, prevent his presence, it desires to thank him for the able Address just read to the Convention."

Seconded and unanimously carried.

Dr. Dudley S. Reynolds of Louisville, Ky.—I move, sir, that the Address of the President be referred to a committee of five appointed by the Chair to take such action as the practical suggestions contained therein may seem to require. Seconded.

Dr. H. A. Hare of Philadelphia—I would suggest that the Address be referred to the Executive Committee.

Dr. Reynolds—I will withdraw my motion in favor of the suggestion.

Dr. W. T. Bishop of Harrisburg, Pa.—There is one more suggestion I would like to make, and that is that the Secretary be directed to omit, and the reporters requested to exclude, any mention whatever of that unfortunate motion made at the beginning of the session in regard to the absence of General Sternberg. It was an unfortunate mistake and ought to be dropped.

The President—The resolution offered was declared out of order.

The next thing in order was the report of the Rush Monument Fund, which was read by the Chairman, Dr. A. L. Gihon.

It was moved that the report be received and referred to the Business Committee with the request that the suggestions contained therein be considered and report to the Association before the end of the meeting. Seconded.

[The Secretary of the Business Committee carried away this report.]

Dr. E. F. Ingals of Chicago—There is one inaccuracy in the report with reference to the expenses of the Business Committee, and I hope it will be corrected. The Treasurer is upon the stage, and I have no doubt he can place us right. The members of the Committee were not paid their expenses up to last year, and I do not think they have been paid since. (The Treasurer did not take cognizance of the remarks of Dr. Ingals.)

Dr. H. A. Hare of Philadelphia—I would like to ask whether if we adopt the resolution of Dr. Gihon, it will carry with it the resolution regarding the payment of traveling expenses of the officers of the Rush Monument Fund, or is it a separate motion?

The President—I should think it ought to be a separate motion.

Dr. T. J. Eskridge of Denver—About one year ago when the Association met in Philadelphia, our distinguished friend Dr. J. W. Graham of Denver, assumed that Colorado would raise two thousand dollars toward the Rush Monument Fund. At that time he did not have a single pledge behind him. He came back to Colorado, and at a meeting of our State Society, within three hours, a subscription was started, and we had the entire two thousand dollars pledged. (Applause.) As Chairman of the Local Committee of the Rush Monument Fund, having

started my practice in the same district where Benjamin Rush practiced and where he won fame, I will say that it gives me great pleasure to hand over to the Chairman of the Rush Monument Fund a check for $2000, with the understanding, if he wishes, that it be placed at 4 per cent. interest in the First National Bank until it is called for. (Applause.)

Dr. E. D. Ferguson of Troy, N. Y.—In order that we may continue to redeem pledges, I wish to hand to Dr. Gihon a check for $2000, without any conditions whatsoever for the Rush Monument Association, it being the subscription of the New York State Medical Association. (Applause.)

Dr. A. L. Gihon—A few minutes ago I said we had four thousand and some odd dollars. The amount has already been doubled and I have now over eight thousand dollars.

Dr. H. A. Hare of Philadelphia—As Chairman of the Committee of Arrangements of the Philadelphia meeting of the Association, after closing up the business your Committee found that there was a rebate of 10 per cent. from all exhibitors, leaving a balance, after defraying all expenses, of $200, which we desire to contribute toward the Rush Monument Fund.

Dr. S. C. Gordon of Portland, Me.—I wish to say, Mr. Chairman, that at the last meeting of the Maine Medical Association, a motion was made by me that our Treasurer be authorized to pay to the Rush Monument Fund the small sum of $100, which Dr. Gihon can have by drawing upon the Treasurer of that Association.

Dr. Wm. H. Humiston of Cleveland, Ohio—As late President of the Ohio State Medical Society, I herewith present a New York draft on the Fourth National Bank for $336 toward the Rush Monument Fund.

Dr. Miles F. Porter of Fort Wayne, Ind.—In behalf of Indiana, being the Chairman of the Rush Monument Fund, I wish to say that Indiana is not yet ready to make a final report. She pledged you nothing at the last meeting, although it was said that she would try to do her duty. I have secured about five hundred dollars, a check for which I am ready to hand to the Chairman of the Committee, but Indiana wants to do something more.

Dr. George L. Cole of Los Angeles, Cal.—I bring with me on behalf of California a check for $110, which is given unconditionally by the California State Medical Association in accordance with the resolution adopted by that body.

At the conclusion of Dr. Cole's remarks, the President put the motion to accept the report, and it was carried.

The Permanent Secretary read his report as follows:

REPORT OF PERMANENT SECRETARY.

Gentlemen:—The Secretary would respectfully report that in accordance with the resolution adopted at the last meeting, he issued a circular letter to each State and Territorial medical society, notifying them of the action taken relative to the fund for the Rush Monument, and the desire to raise a fund of $100,000 for that purpose. Replies were received from several that a special committee had been or would be appointed to take charge of this matter. It is expected that these committees will report at the time the report of the Monument Fund is called for. From the lists furnished by the State and Territorial medical societies, a list of the societies entitled to representation in this Association has been prepared and published in the JOURNAL of the Association. Your Secretary is happy to say that very few changes or additions were found necessary after the report was published.

In accordance with the By-Laws, your Secretary notified all who were in arrears for three years (a list of whom had been furnished him by your Treasurer), and in many instances the arrears were paid. Having been notified by the Secretaries of certain State societies that a number of persons had been registered who were not in any way entitled to membership in this organization, your Secretary informed these gentlemen to that effect and suggested to them how they could become members of an association in affiliation with us. In a number of instances gentlemen took advantage of this suggestion and became members in full fellowship.

[Signed] W. B. ATKINSON.

On motion, the report was accepted.

Dr. Henry P. Newman of Chicago, the Treasurer of the Association, read his report as follows:

ANNUAL REPORT OF THE TREASURER OF THE AMERICAN MEDICAL ASSOCIATION FOR THE FISCAL YEAR COMMENCING JANUARY 1, 1897, AND ENDING DECEMBER 31, 1897.

In presenting my report it is my privilege to congratulate this Association upon its constantly increasing growth and prosperity. The year which closed January 1, 1898, added 1500 new members, and during the same time we have dropped for non-payment of dues only about seventy-five members, being a larger net gain in membership than for any previous year. The receipts during the time I have had the honor of being your treasurer have increased from $12,695.58 in 1894 to $32,200 in 1897. The balance on hand January 1, was $14,092.85, with a reserve or sinking fund of $3,000. As will appear in the Trustee's report, the Association has recently added a valuable press to the equipment of our efficient and prosperous printing and publishing plant. This with the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION under its present able management, constitutes a most valuable asset in estimating our possessions, and is a guaranty of increasing prosperity in the future.

H. P. NEWMAN, M.D., in account with the American Medical Association.

1897		RECEIPTS.	
Jan.	1.	To cash, balance on hand	$ 5,865.56
Feb.	27.	To cash, check returned unpaid	39.75
June	7.	To cash, registration fees, Philadelphia meeting	7,580.00
Oct.	26.	To cash, interest on Building Fund or investment ($3000), less exchange	176.80
Dec.	31.	To cash, returned from Dr. H. A. Hare, Chairman of Committee on Arrangements, Philadelphia meeting,	1,000.00
"	31.	To cash, Journal A. M. A., advertising, subscriptions, pressework and sales	25,657.67
"	31.	To cash, dues paid by members up to date	24,620.00
		Total	$64,322.78

		DISBURSEMENTS.	
Jan.	8.	By cash, First National Bank, check returned unpaid,	$ 39.75
Feb.	27.	By cash, Dr. W. B. Atkinson, Secretary, stamped envelopes	10.90
March	2.	By cash, Dr. E. E. Montgomery, Trustee, expenses of attendance at Trustees meeting, Chicago	62.50
April	21.	By cash, Dr. D. W. Graham, expenses of incorporation,	5.00
May	7.	By cash, balance Treasurer, honorarium, year ending May, 1897	744.00
"	7.	By cash, supplies for Treasurer's office	20.71
"	7.	By cash, Dr. E. Cutter, expenses as Secretary of Section on Physiology	6.50
June	7.	By cash, Dr. A. Garcelon, Trustee, expenses of attendance at Trustees meeting, Chicago, and annual meeting at Philadelphia	136.50
"	7.	By cash, Dr. J. T. Priestley, Trustee, expenses of attendance at Trustees meeting, Chicago, and annual meeting at Philadelphia	115.80
"	7.	By cash, Dr. Chas. A. L. Reed, Trustee, expenses of attendance at Trustees meeting, Chicago, and annual meeting at Philadelphia	103.00
"	7.	By cash, Dr. Joseph Eastman, Trustee, expenses of attendance at Trustees meeting, Chicago, and annual meeting at Philadelphia	72.00
"	7.	By cash, Dr. I. N. Love, Trustee, expenses of attendance at Trustees meeting, Chicago, and annual meeting at Philadelphia	107.00
"	7.	By cash, Dr. J. M. Mathews, Trustee, expenses of attendance at Trustees meeting, Chicago, and annual meeting at Philadelphia	110.00
"	7.	By cash, Dr. G. C. Savage, Trustee, expenses of attendance at Trustees meeting, Chicago, and annual meeting at Philadelphia	110.40
"	7.	By cash, Dr. D. W. Graham, Trustee, expenses of attendance at annual meeting, Philadelphia	36.00
"	7.	By cash, Dr. J. B. Hamilton, Editor, expenses of attendance at annual meeting, Philadelphia	27.50
"	7.	By cash, Dr. H. P. Newman, Treasurer, expenses of attendance at annual meeting, Philadelphia	37.50
"	7.	By cash, Dr. A. P. Clark, expenses of Chairman of Section	6.00
"	7.	By cash, Dr. Elmer Lee, expenses of Chairman and Secretary of Section	25.00
"	7.	By cash, Dr. F. H. Musser, expenses of Chairman of Section	24.00
"	7.	By cash, Dr. W. D. Atkinson, salary for the year and expenses attending meeting	300.00
		supplies for Secretary's office and sundries	86.58
		4,000 stamped envelopes for Secretary's office	21.80
"	7.	By cash, G. E. Malsbury, stenographic report, Philadelphia meeting	70.00
"	7.	By cash, I. J. Williams, stenographic report, Philadelphia meeting	80.00
"	7.	By cash, Dr. H. O. Reik, stenographic report, Philadelphia meeting	100.00
"	7.	By cash, advanced to Committee of Arrangements at Philadelphia meeting	1,000.00
July	16.	By cash, dues refunded, duplicate payment, Philadelphia meeting	10.00
"	16.	By cash, supplies for Treasurer's office	16.05
"	16.	By cash, Wm. Whitford, stenographic report, Philadelphia meeting	80.00
Aug.	13.	By cash, H. B. Mills, stenographic report, Philadelphia meeting	100.00
Nov.	30.	By cash, Smith Premier Typewriter Co., supplies for Secretary's office	16.40
Dec.	20.	By cash, Dr. C. O. B. Wingate, Chairman Committee on Public Health, expenses to Washington	200.00
"	20.	By cash, First National Bank, postage and expense on drafts	14.30
"	29.	By cash, H. P. Newman, Treasurer, half-yearly honorarium to December, 1897	500.00
"	29.	By cash, Graves' Index Book for Treasurer's office	17.00
"	31.	By cash, postage for the year	315.00
"	31.	By cash, exchange on collections	45.07
"	31.	By cash, requisition paid on Journal expense account,	20,000.00
"	31.	By cash, total Journal expense account, $45,657.67	
		Less on cash requisitions, 20,000.00	25,657.67
"	31.	By cash, balance on hand	14,092.85
		Total	$64,322.78

Respectfully submitted, HENRY P. NEWMAN, Treasurer.

At the conclusion of the report Dr. E. Rosenthal of Philadelphia, said: In the report of the Treasurer reference was made to certain bills presented by Secretaries of Sections, and I understand these bills were paid. I have a bill of expenses for work done in connection with the Section on Diseases of Children, and I would like to know whether it will be paid. I only wish to ask for information as to whether the expenditures of the different Secretaries of Sections for postage and such things, necessary for the proper fulfillment of such offices, if brought before the Association in due form or in order, will be paid, or whether the Secretaries have to pay their own expenses. This is the question I wish to raise.

Dr. T. J. Happel of Trenton, Tenn.—I move that the report of the Treasurer take the ordinary course; that is, of being referred to the Business Committee, and that the matter referred to by the gentleman from Philadelphia be passed upon. Seconded.

Dr. John B. Hamilton of Chicago—If the Association will permit me, I can answer in a few words the question of the gentleman from Philadelphia. The bills paid and authorized to be paid by the Board of Trustees are for those expenses incurred at and incidental to the meetings, including printing of special programs and the like. The bills declined to be paid by the Board of Trustees were those which included writing of letters, hiring stenographers and work preliminary to the meetings of the Sections. No discrimination is made in the settlement of those bills. (Report was then referred to the Business Committee.)

(To be continued.)

SOCIETY NEWS.

The Harlem Medical Association of New York City held its annual election on June 13, which resulted as follows: President, Philip A. Malleson; vice-president, Henry W. Mooney; secretary, Joseph E. Lumbard; treasurer, Charles A. Clinton; and trustees, David Franklin, Samuel E. Gibbs and Henry J. Wolf.

The Delaware State Medical Society held its 109th annual session in Wilmington, June 14. The following officers were elected: President, B. L. Lewis, Harrington; first vice-president, O. D. Robinson, Georgetown; second vice-president, William H. Hancker, Farnhurst; permanent secretary, Frank Belville, Delaware City; assistant secretary, John Palmer, Jr., Wilmington; treasurer, William C. Pierce, Wilmington; councilors, Francis L. Springer, James H. Wilson, Hiram R. Burton; medical examiners, James H. Wilson, H. R. Burton, J. A. Ellegood, P. W. Tomlinson, D. L. Mustard, Willard Springer, J. T. Massey, L. A. H. Bishop, O. D. Robinson and E. S. Dwight. The next meeting will be held in Wilmington.

New Mexico Medical Society.—The seventeenth annual meeting was held at Las Vegas. The new officers elected were: President, S. D. Swope, Deming; first vice-president, E. B. Shaw, Las Vegas; second vice-president, J. H. Wroth, Albuquerque; third vice-president, Wm. C. Bailey, Hot Springs; secretary, G. A. Wall, Albuquerque; treasurer, C. G. Duncan. The next place of meeting was fixed at Albuquerque, for May, 1899.

NECROLOGY.

JOHN ALBERT LARRABEE, M. D., Professor of Obstetrics and Diseases of Children in the Hospital College of Medicine, Medical Department of the Central University of Kentucky, Louisville, was born at Gorham, Maine, May 17, 1840. He was the son of John Rogers Larrabee, and Martha Cooms Larrabee; grandson of Ephraim Larrabee and Jane Rogers, and great-grandson of Benjamin Larrabee, Jr., and Lydia Bailey, and great-great-grandson of Capt. Benjamin Larrabee and Mary Eilthorpe. The family is further traceable through an illustrious line, back to 1620, when the first historic account of their presence in this country begins. Dr. Larrabee received careful educational training in his youth at Bethel Academy, and at Gorham; subsequently at Bowdoin College, Brunswick, Maine, where he finally graduated in the Maine Medical School in 1864. Before completing his medical education he went to Washington City, in accordance with the advice of his cousin, Prof. Conant, of New York, and stood an examination for appointment as medical cadet in the United States Army, September, 1862. Of the sixty applicants, Larrabee stood third in the list, fifteen only being selected. The medical cadet, it was intended, should rank between the hospital steward and assistant surgeon. Some confusion having arisen in reference to this new title, it was abandoned, and no other cadets were appointed. He was assigned to duty at Hospital No. 7, Fort McCook, Louisville, entering upon his duties October 20, where he continued until the time arrived to return to Brunswick, where he completed his medical education, graduating with the degree of Doctor of Medicine, with the first honors of his class. He returned to military service at once, and was assigned to duty at Fortress Monroe, and was Surgeon-in-charge of the sick and wounded on the transport steamer, *Atlantic*. At his own request he was subsequently assigned to duty at Taylor Barracks, at Louisville, subsequently becoming assistant medical director of the post. He was married to Harriet Winslow Bulkley, daughter of William Henry Bulkley and Sarah Lee Riggs, March 30, 1865. Subsequently, in May of that year, he resigned his commission in the army, and entered upon his illustrious career as civil practitioner, at Louisville. He was always conspicuous as a member of the local and State medical societies, never failing to contribute something of scientific value at the regular meetings. He was secretary of the Kentucky State Medical Society for several years. He was one of the founders and subsequently president of the Louisville Medico-Chirurgical Society.

When the curators of the Central University of Kentucky undertook, in December, 1873, to establish a medical department, he became one of the members of its faculty, and aided materially in the organization of the school and in establishing its character and reputation as an institution of learning. He was, by far, the most popular, not to say the most gifted teacher in any of the medical schools of Louisville. He always had the happy faculty of discovering just what the student desired and administering, in the course of his instruction, just what the student needed. He was always one of the leaders in determining the policy of the institution. At the annual election in June, 1893, he was chosen president of the joint faculties of medicine and dentistry in the University, a position he filled with creditable distinction, to the hour of his death. So devoted was he in his attachment to the college that he insisted in his last illness, which he well understood must prove fatal, upon having the diplomas printed that he might sign them before his death; and, with heroic courage, he lay propped in bed and with a bold and graceful stroke of the pen affixed his signature to all of the diplomas, with the exception of one, which he signed on the wrong line. This last official act was completed in the afternoon of Wednesday, June 8. That night toxemia became manifest; coma began twenty-four hours later, and death ended the scene on the 12th of June, at his home on Baxter Avenue, in the Highlands, a delightful suburb of Louisville. Dr. Larrabee was a man of rare personal magnetism. He had a full beaming eye and open countenance, and was master of the choicest English. He was always the center of attraction in any company. He held twice the office of president of the Section on Diseases of Children in the AMERICAN MEDICAL ASSOCIATION. He was frequently the delegate of the faculty to the annual meetings of the Association of American Medical Colleges, in the organization of which he took an active and leading part. He was in thorough sympathy with the movement to advance the standard of medical education, and never relaxed for one moment his efforts to promote the cause. He was the first and only physician to the Home of the Innocents, tendering his

services with devoted interest for more than twenty years. He was, in fact, the founder of the Children's Hospital, in which he took an active and important interest. His opinion in consultation was sought far and wide. He was one of the greatest practitioners of medicine and a pioneer in pediatrics. His clinic on diseases of children at the Hospital College of Medicine was the largest of its kind in this section of the country. Thousands of his students all over the United States unite with his family and immediate colleagues in mourning the loss of a great and good man. D. S. R.

JOHN BLAIR GIBBS.—Resolutions passed by the Society of the Alumni of Lebanon Hospital, New York, on the death of John Blair Gibbs (*vide* JOURNAL, p. 1481):

WHEREAS, We have learned with profound sorrow and regret of the death of Dr. John Blair Gibbs at Guantanamo, Cuba, we feel that we should express ourselves in a manner whereby his memory may be honored. Not only has a vacancy been made among ourselves which can never be filled, but the medical profession has lost a true brother and the Nation a son whose manliness, noble character and zeal can never be questioned; and

WHEREAS, We have constantly been indebted to him, while acting in the capacity of assistant attending surgeon at Lebanon Hospital, for valuable council and unfailing courtesy, we therefore,

Resolve, That, to perpetuate his name for his heroic conduct, and as a token of our esteem and love, to erect a tablet in the operating room of Lebanon Hospital, and that these resolutions be entered in full in the minutes of the meeting.

F. H. ALLISON, M.D., Kittanning, Pa., June 11, aged 78 years.——P. M. Chadwick, M.D., Omaha, Neb., a graduate of the University of Vermont and the College of Physicians and Surgeons, New York City, June 11.——S. H. Chester, M.D., Jackson, Tenn., June 10.——J. W. Donnell, M.D., Clarkfield, Minn., June 11.——Cyrus K. Kelley, M.D., Plymouth, N. H., June 21, aged 77 years.——Richard W. Mansfield, M.D., Baltimore, Md.——G. W. Miller, M.D., Lampeter, Pa., June 2, aged 68 years.——J. R. Reid, M.D., Thomasville, Ga., June 13.——James H. Stone, M.D., Tappan, Ohio, June 7, aged 67 years, a graduate of Bellevue Hospital Medical College, 1856.——J. B. Cole, M.D., Wabasha, Minn., Ann Arbor, 1881, June 19.

DEATHS ABROAD.—F. Halbertsma, professor of obstetrics and gynecology, Utrecht.——J. L. Alonso, professor of clinic medicine, Salamanca.——F. J. Trier, Copenhagen, one of the most prominent clinicians of Denmark, aged 67 years.

PUBLIC HEALTH.

Yellow Fever Again.—Recently seven more cases of yellow fever at McHenry, Miss., were reported to the Louisiana State Board of Health, this being a total of fifteen cases from May 20 to June 13.

Not Liable for Cost of Renovating House.—In the case of Webb vs. the Board of Health of the City of Detroit, a writ of mandamus was prayed for, to compel the board to allow a bill for losses occasioned by a smallpox infection of certain premises, the items charged being: "Cost of renovation, etc., after disinfection, $107; loss of rent, $80; furniture, bedding and other articles destroyed, $40." But the supreme court of Michigan holds, March 28, 1898, that the writ was properly denied. It says that the smallpox broke out through no fault of the health board. As soon as the first case in this house was reported the patient was removed by the board to the hospital and the house quarantined. It was quarantined nearly two weeks when the second case broke out. This patient was not removed to the hospital, but the house was continued to be quarantined by the board. The board did not make a hospital of the house, or make any further use of the goods therein than was necessary to the proper care of the patients, who were there found suffering from the disease. It was the duty of the board to quarantine the house, and for the protection of the public, to disinfect the premises. For injury to property resulting from a performance of this duty by its officers, the court holds that the municipality was not liable. If, however, the officers did their work negligently and thereby caused unnecessary damage, it is suggested that then the officers were liable, not the municipality.

Militant Prophylaxis of Tuberculosis.—Additional suggestions made since the committee presented their report to the Paris Académie de Médecine include regulations for the proper disinfection of rooms in which persons have died of phthisis, and the cremation of all articles of clothing and bedding among the indigent, to be replaced by the municipality. Laveran urges disinfection of rooms occupied even temporarily by phthisics. He observes that family prophylactic measures may suffice among the well-to do, but that the only effectual measure for the poor is isolation in a sanitarium or hospital. In spite of the recommendations of pocket cuspidors, visits to twenty of the most frequented drug stores in Paris disclosed that they had never been heard of; absolutely no demand by the profession or public. Out of five dealers in physicians' and surgeons' supplies only one had ever heard of them, and he had sold but three. Professor Landouzy appeals to the profession at large to enter upon a campaign of education of the public, dispelling unfounded fears, but proclaiming the dangers of tuberculous sputa and insisting upon cuspidors in profusion, raised a certain height above the floor. Patients should be instructed at once as to the nature of their malady, which Grancher calls "the most curable of all chronic diseases." He should carry a pocket cuspidor disinfected with the house cuspidors by boiling or with antiseptics every evening. The physician should not wait for certainty, but make a "probabilty diagnosis" whenever, with loss of strength and emaciation, he notes permanent alteration in the vesicular respiration in one of the pulmonary apices. This militant prophylaxis on the part of physicians will alone accomplish the purpose. A writer in the Vienna *Klin. Rundschau* of May 12 urges that strictly enforced official prophylactic regulations are imperative.

Members of Board can all be Regulars.—One of the provisions of the constitution of the State of Texas is that "the legislature may pass laws prescribing the qualifications of practitioners of medicine in this State, and to punish persons for malpractice, but no preference shall ever be given by law to any school of medicine." This, it was argued, in the case of Dowdell vs. McBribe, was violated by article 3778 of the Revised Statutes of Texas of 1895, which provides that the "board of medical examiners shall be composed of not less than three practicing physicians of known ability, and who are graduates of some medical college recognized by the AMERICAN MEDICAL ASSOCIATION." But if this be true, and if article 3778 is unconstitutional, Mr. Justice Key, of the court of civil appeals of Texas, suggests the Texas statute regulating the practice of medicine will still be complete, and should be enforced, without reference to that article. And, upon this ground, he expresses the opinion that, regardless of the constitutionality of that article, no recovery should be allowed for medical services rendered by a person who has not complied with the requirements of the balance of the statute. But Mr. Justice Collard, who may really be said to deliver the opinion of the court, in this case, April 13, 1898, states it, as his view, that the provision of the constitution referred to merely forbids that any preference shall ever be given by law to any schools of medicine, in the examination of applicants for certificates before the board, while the board may be composed exclusively of physicians, graduates of schools recognized by the AMERICAN MEDICAL ASSOCIATION, and each member of the association may belong to the regular school, and yet the constitution not be violated. In other words, he maintains that it is only when the

examining board make a preference as to schools of medicine in its action that the constitutional right of the applicant is invaded. He also mentions the fact that article 3638 of the Revised Statutes of 1879, providing that no person, except those who complied with the law, should be permitted to practice medicine, was not carried forward in the statutes of 1895, but was omitted by the codifiers. But, he says, "we think, when the statutes of 1895 are read in connection, the intention becomes clear that the law must be followed, to qualify one to practice medicine in the State, and without such qualification he can not be permitted to practice."

Binding Contract Made by Board of Health with Physician.—During an epidemic of diphtheria, an arrangement was made with a practicing physician by the board of health of a township that he should take charge of the patients as physician and nurse, and bury the dead, if any; that supplies should be furnished through him; that he should quarantine the houses where there were cases of the disease, and take all necessary steps to check and control the disease. The physician carried out the instructions of the board, and gave nearly all his time to the work. But when his bill, which the board of health allowed and certified, was presented to the board of supervisors of the county, the latter cut it down, because some of the persons treated were able themselves to pay for treatment. Then the physician applied for a writ of mandamus against the board of supervisors. This the circuit court denied, on the ground that it was not the proper remedy, and because it held that services rendered to patients able to pay would not be a charge against the county. But the supreme court of Michigan reverses the lower court on both points, stating that the writ would issue as prayed. It not only justifies this by a citation of authorities, but by stating, April 19, 1898, case of McKillop vs. the Board of Supervisors of Cheboygan County, that if, in emergencies of this kind, it is understood the agreements made by the boards of health can not be enforced, the statutes designed to protect the community in these times, requiring prompt action of the board of health, will be rendered nugatory.

MISCELLANY.

Journal Index.—The complete index, together with title page, etc., for volume XXX of the JOURNAL, will be published next week.

Increase of the Naval Surgical Staff.—A large number of applications for positions as acting assistant surgeons have been received by the Board of Naval Inspectors, at the Naval Hospital at Brooklyn. The bill for the employment of these extra men is still before Congress, and as soon as it becomes a law an examination of the six or seven hundred men who have already applied at the different stations will be held. Unfortunately the bill provides for only twenty-six acting assistant surgeons.

Occupations of 2200 English Insane.—The following is a classified list of some of those who have been admitted into English lunatic asylums during the past five years: Five hundred and seventy-nine agricultural laborers; 484 engineers and artisans; 299 bank, insurance and other clerks; 214 shopkeepers; 213 soldiers; 176 teachers, etc.; 61 commercial travelers; 44 musicians; 30 physicians and surgeons; 28 clergymen; 28 authors and journalists; 22 actors.

New York Professor Resigns.—Dr. James W. McLane, after thirty years of service as a teacher, has resigned the chair of professor of obstetrics in the College of Physicians and Surgeons of New York. In accordance with the wishes of the medical faculty Dr. McLane was made emeritus professor of obstetrics, and retains his position as dean of the college. The vacancy in the chair of obstetrics was filled by the appointment, with the title of lecturer in obstetrics, of Edwin B. Cragin, M.D. Dr. Cragin is a graduate of Yale, class of 1882, and of the College of Physicians and Surgeons, 1886.

Weakest Kind of Evidence.—The experience of the courts has demonstrated, says Mr. Justice Follett, in delivering the opinion of the fourth appellate division of the supreme court of New York, in the late case of Dobie vs. Armstrong, that the answers of experts, though honestly given, to hypothetic questions embracing pages of assumed and isolated facts covering a long lifetime, about which facts the experts have no personal knowledge, are the weakest and most unreliable kind of evidence in respect to the sanity or insanity of the person inquired about.

Bacillus of Syphilis.—As already mentioned, Van Niessen of Wiesbaden claims to have discovered a polymorphous bacillus requiring only an enlargement of 60 diameters to be visible, resembling the hyphomycetes, in the blood of syphilitics at all stages of the disease, even the most remote from the date of infection. He deduces that syphilis is a chronic disease of the blood, absolutely incurable by all methods known to date and contagious and inheritable at all periods. His detailed communication is published in the *Cbl. f. Bakt. u. Inf.*, Nos. 2 to 7.

The Army in Transports.—On inquiry at the office of the Surgeon-General it was found that the latest medical news from the Fifth Army Corps, General Shafter's command of regular troops, consisted of a report by Lieut.-Colonel B. F. Pope, Chief Surgeon of the Corps. The report was dated June 13, on board Transport No. 12, Tampa Bay, Florida. It stated that the troops embarked on Wednesday, June 7, and had been on shipboard since that date. Eight of the transports were at first considerably overcrowded, but relief had been obtained by unloading 1000 men and putting them on the steamer *Knickerbocker*. In spite of very trying conditions the health of the command was excellent. The steamer *Olivette* had been secured as a hospital ship for the trip, this vessel having been considered better adapted for hospital purposes than any other in the fleet. The medical department is well organized, and according to Dr. Pope "affairs seem to be in good shape for the expedition."

Maryland Hospital for the Insane.—An important step in the general movement for the removal of insane patients from almshouses and jails is that accomplished recently by the transfer from the almshouse of Baltimore of its fifty insane patients to the new State insane hospital near Sykesville. The hospital is a model institution. Its four buildings are constructed pretty much on the same principle as the Johns Hopkins Hospital of Baltimore. There is nothing about it suggestive of a place of confinement. It has no padded cells and no instruments with which to restrain violent patients. Dr. George Rohe, the superintendent, is an advocate of mild treatment. For the accommodation of additional patients when the capacity of the present buildings is exceeded, as is probable in the near future, it is proposed to erect other buildings about half a mile from the present site.—*Charities Review*, April.

Calcutta General Hospital.—A novel feature of the new general hospital for Europeans in Calcutta, India, the corner-stone of which was recently laid, will be a system of ventilation during the hot and rainy seasons by cold and dried air. The idea originated with brigade surgeon Lieutenant-Colonel Crombie, the superintendent of the hospital and, like most new ideas, met with a great deal of opposition, although the advantages of the system are obvious. During the hot and rainy seasons Calcutta has a temperature ranging from 85 to 95 degrees F., and a humidity which frequently reaches 90 per cent. Dr. Crombie proposes to establish a uniform temperature in the wards, of from 75 to 80 degrees F., and a humidity reduced to about 60 per cent., as a necessary part of the process of cooling the air. As a cool dry air is to be passed through screens of cotton wool, there will be no mosquitoes, and accordingly no necessity for punkahs and mosquito curtains.—*Medical News.*

Conservatism in Head Traumatism.—At the Berlin Medical Society, Von Bergmann showed two patients with bullets in the brain. In both, the wounds were healed and the patients presented very few symptoms at the time of demonstration. At first, however, there had been in one case hemiplegia, hemi-anesthesia, one side deafness and total blindness, which had all passed away, leaving finally a slight paralysis only of the left leg. The projectiles were skiagraphed with the X-rays. Notwithstanding the urgent wish of both parents to have the bullets extracted, Von Bergmann had refused to operate, as there was no indication for such interference.

American Medical Missionary Work in India.—In India, where many lethal diseases flourish like plants in a hothouse, and which is a nursery of epidemics and the permanent abode of cholera, it is not unnatural that missionaries should have been led to establish hospitals. The American Board planted a mission in Madura, South India, in 1835, and from the beginning of this mission has devoted much attention to medical relief. Among the doctors who have gone out to Madura as medical missionaries stand the honored names of Steele, Lord and Palmer, the last a brother of Senator Palmer of Illinois. At Dindigul, the veteran Dr. Chester has for thirty-five years devoted his time to this department of missionary work. The medical work carried on by this mission has done much to win the way of the mission into the favor of the native people of that district.—*Harper's Weekly.*

Antitoxin is not "Vaccine Virus."—This is now judicially settled by the decision of the United States circuit court of appeals, in Koechl vs. United States, January, 1898. The question arose over the assessment for duty of certain antitoxin, which the collector of customs of the port of New York held dutiable as a "medicinal preparation," while the importers contended that it should be admitted free of duty, as "vaccine virus" under the tariff act of 1894. They cited for this the Century Dictionary, which gives as a secondary definition of "vaccine" when used as a noun: "In a general sense the modified virus of any specific disease introduced into the body in inoculation, with a view to prevent or mitigate a threatened attack of that disease, or to confer immunity against subsequent attacks." No authority for this use is cited. The quotation expresses merely the opinion of the compiler or compilers of the dictionary, and the court of appeals goes on to say, more than the mere ipse dixit of a contributor to such a work is required to satisfy it that the words "vaccine virus" are actually used with such meaning by educated people, especially in view of the fact that none of the other standard dictionaries give any such definition of the phrase. So it holds that the collector's classification upheld by the circuit court was correct, while that contended for by the importers and adopted by the board of general appraisers was not.

Convention Notes.—Resolutions adopted by the Glenwood excursion party. The members of the AMERICAN MEDICAL ASSOCIATION en route from Colorado Springs to Glenwood on a special excursion train on the Colorado Midland Railway passed a series of resolutions and presented them to George W. Ristine, president of the Colorado Midland Railway, reading as follows, and signed by every member of the party:

"We, the members of the AMERICAN MEDICAL ASSOCIATION, who were fortunate enough to take advantage of the excursion to Glenwood Springs, afforded us in viewing one of nature's greatest panoramas, are especially appreciative of the accommodations, courtesy and kindness shown, not only by the management, but by every employe on the road with whom we have come in contact. We feel that no words of praise we can say in the future for the Colorado Midland Railway can adequately compensate for the pleasure we have derived from the unparalleled trip through the Rocky Mountains."

President Ristine responded, thanking them for their complimentary resolutions, and saying that if the Colorado Midland Railway and its employes have contributed to their pleasure and sojourn in Colorado, they felt repaid for any courtesies extended, and he hoped Colorado would see them again and only regretted that each of them could not take home with him a carload of scenery, as there was plenty to spare.

The ASSOCIATION was represented at Colorado Springs, June 11, by a train load of delegates. Following a luncheon at the Broadmoor Casino and a visit to the Cheyenne Canyons a reception was given by the El Paso Club and a dance at the Mansions with excursions to the summit of Pike's Peak and drives to the Garden of the Gods and other scenic environs.

Many doctors were royally entertained at the Montezuma, Hot Springs, N. M.

The British Medical Staff in the Last Conflict in Northern India.—The following is a comment from a high official source upon the conduct of the medical department of the British forces sent against the Afridis: "Now, I suppose there is no department which has done more admirable work in the late campaign than the medical department, not only in the campaign itself, but also in the treatment of the sick and wounded in the great hospitals that were formed. A large general hospital was opened at a station in the north of India. A newspaper at home published a report affirming that all the arrangements were as bad as they could be, that there was an insufficient staff, that the patients slept on the ground, and that the equipment was defective; that, for example, there were several serious cases of abscess of the liver and only three feeding cups. Now, what are the facts? There was an ample staff: Sixteen medical officers and eighteen assistant surgeons, and some nursing sisters; no patients ever slept on the ground; there were excellent barracks as well as tents; there was an ample supply of every kind of hospital equipment. There was not a single case of abscess of the liver and there were forty feeding cups instead of three; while there was not a single death during the whole of the time the hospital was open. I merely make this statement to show how absolutely ill-founded many of the reports are."

Personal Notes.

NATHAN S. DAVIS, M.D., Dean of Northwestern University Medical School, Chicago, has, owing to his advanced age, resigned that office.

Prof. DANIEL R. BROWER of Rush Medical College has been given the honorary degree of LL.D., by Kenyon College.

Dr. F. C. HOTZ of Chicago has been appointed professor of Ophthalmology, and Dr. FRANK BILLINGS professor of Medicine in Rush Medical College.

Dr. Charles W. Page of the Hospital for the Insane at Danvers, Mass., will enter upon the Superintendency of the Connecticut Hospital for the Insane at Middletown, Conn. He is to succeed Dr. James Olmstead, who died Dec. 4, 1897, and will assume charge about September 1.

San Francisco.

SAN FRANCISCO COUNTY MEDICAL SOCIETY.—At the regular monthly meeting, June 14, Dr. G. W. Davis reported a case of gas asphyxiation. The case recovered; oxygen was not used. Dr. Krotoszyner reported a case of unusual interest, that of primary carcinoma of the pancreas, with no symptoms that in any way pointed to the actual cause of the peculiar trouble. The case was seen by a number of doctors, in consultation, but no one of them was able to give the slightest approximation to a correct diagnosis. On postmortem the liver, lungs and pia mater were found to be involved by secondary growths. Dr. Philip King Brown reported an autopsy that he had just made in a case of hemorrhagic disease of the new-born. The autopsy revealed one new fact, viz.: that the blood would actually clot, for the stomach and intestines were found filled with clotted blood. Several cases of scurvy in infants were reported by Dr. Levison. In one of the cases the true condition was very obscure and the diagnosis of infantile paralysis

had been made by several specialists. The true condition was subsequently made out, and upon the administration of orange juice a cure resulted in about thirty-six hours.

Recent Movements of the Army Medical Staff.—Captain John S. Kulp, U. S. Army, has been ordered in from the Department of the Columbia to report to the Surgeon-General for assignment, and Captain W. D. Crosby's orders carry him to the Philippine Islands. Assignments to the 5th Corps, General W. R. Shafter at Tampa, Fla., have been made as follows: Captains Charles F. Kieffer and H. R. Stiles and Lieutenants P. C. Fauntleroy and Carl Darnall, U. S. Army, with Acting Assistant Surgeons Edward C. Poey, J. R. Shannon, R. P. Strong and Henry E. Wetherill. To General Wheeler's Cavalry Division, also at Tampa, Fla.: Captains Fred P. Reynolds and George J. Newgarden, U. S. Army, and Acting Assistant Surgeon S. M. Gonzalez, while Acting Assistant Surgeon T. S. Dabney has left Tampa for assignment at Jackson Barracks, New Orleans, La. To General Fitzhugh Lee, 7th Army Corps at Jacksonville, Fla.: Acting Assistant Surgeon Geo. B. Lee. To General J. R. Brooke at Chickamauga, Ga.: Captains James D. Glennan, W. P. Kendall, W. Stephenson and Edgar A. Mearns, U. S. Army. To General William M. Graham, 2d Army Corps at Camp Alger, Falls Church, Va.: Captain A. E. Bradley, U. S. Army. To Major B. D. Taylor at the General Hospital at Fort McPherson, Ga.: Acting Assistant Surgeons Rupert Norton and Ed. Schreiner. To Major George H. Torney on the hospital ship *Relief*, at New York City: Acting Assistant Surgeon Frederick McG. Hartsock. To Major W. R. Hall at the General Hospital at Key West, Fla.: Captain Ogden Rafferty, U. S. Army. Travel performed by the following Acting Assistant Surgeons under the orders of the Surgeon-General has been approved: Samuel T. Armstrong from Washington, D. C., to Key West, Fla.; A. A. Bailey from Richmond, Tex., to Fort Sam Houston, Tex.; Barnard E. Baker from Charleston, S. C., to Key West, Fla.; Frank Roberts from Marshall, N. C., to Fort Caswell, N. C.; J. W. Donnelly from Washington, D. C., to Fort Mott, N. J.; J. E. Miller from Des Moines, Iowa, to Omaha, Neb.; W. E. Parker from New Orleans, La., to Tampa, Fla.; Edward R. Bragg from Ocean Springs, Miss., to Mobile, Ala.; Hamilton P. Jones from New Orleans, La., to Mobile, Ala.; R. N. Pitts from Montgomery, Ala., to Tampa, Fla.; Roger P. Ames from New Orleans, La., to Mobile, Ala.; A. R. Booth from Shreveport, La., to New Orleans, La.; Joseph A. Tabor from Bay St. Louis, Miss., to New Orleans, La.; Thomas Y. Aby from New Orleans, La., to Mobile, Ala.; Irwin E. Bennett from West Philadelphia, Pa., to Fort Delaware, Del.; E. D. Ferguson from Macon, Ga., to Key West, Fla.; and W. B. Winn from Kansas City, Mo., to Mobile, Ala.

Regimental Hospitals in the Second Army Corps.—Chief Surgeon Girard of the Second Army Corps has found opposition on the part of some of his regimental surgeons to the breaking up of their regimental hospitals for the formation of a field division hospital for war service. As it is not to be supposed that the opposition comes from any of the surgeons who have been deemed worthy of a place on the staff of the division hospital, we must suppose that personal feeling enters somewhat into the contention. Colonel Girard's latest circular to his subordinate (?) officers is as follows:

"To the chief surgeons of divisions:

"You will inform the regimental surgeons that the War Department is fully determined on abolishing the regimental hospital system, which has proved a failure, and caused much unnecessary suffering during the civil war, and has been abandoned by all nations which keep their armies prepared for war.

"An evasion or non-compliance with orders on this subject is, therefore, not only prejudicial to good order and military discipline, but unwise and unpatriotic, in pretending to assume a superior knowledge to that of the established authorities, and setting personal views and interests above the common cause.

"You will inform the regimental surgeons, through their brigade surgeons, that the first and second division hospitals are ready for the reception of patients. They are in charge of about one-fourth of the force of volunteer surgeons, and if the patients do not receive skilful care and treatment no one but the surgeons of the volunteer army will be to blame. To guard against neglect or inexperience, you are directed to send to me a list of names of surgeons, prominent in their profession, in your respective divisions, from whom a consulting board for each division hospital will be chosen. They will be called in consultation in every case of severity, and their decision will be final, subject to my approval.

"You will report to me a list of equipments turned into the division hospitals by the regiments, with a list of regiments contributing.

"You will also report in writing the names of regiments and regimental surgeons having failed to comply with General Graham's orders, in order to enable me to report them to the commanding General."

A New Point of Election for Revaccination.—Dr. Hoggan Ewart writes to the *Lancet* regarding a recent experience in revaccination. He says: "During the epidemic of smallpox at Gloucester, being called upon to revaccinate sixty young women, the inmates of an Anglican Home at Malvern, I revaccinated thirty on the scars left by previous vaccination, and the remainder on the normal skin, and found that the cases revaccinated on the old scars took more perfectly than those done on the normal skin. I also observed that in some of the latter cases, in addition to the reaction arising at the seat of the new abrasions, there was in several cases a sympathetic inflammatory action in one or more of the old scars. Calf lymph was used and there was not a failure in the sixty cases." These remarks run directly counter to the advice of Seaton, who, if we read him correctly where he says of this operation that "it should be done as far as possible from the arm," meaning, no doubt, as far as possible from the site of the primary (or former) vaccination. His instructions in this matter have not their customary clearness and explicitness.

The Reflex of Mr. Gladstone's Career Helpful to Medicine.—It has been frequently observed by writers that Mr. Gladstone had a very limited welcome for medico-sanitary legislation, a view with which the *Philadelpia Medical Journal* does not fully coincide. The editor of that paper, in his issue for June 4, remarks that while the American Press has given some admirable and accurate accounts of that great statesman's career, almost nothing has been brought out to show that the cause of medicine has lost in him a true friend. Mr. Gladstone's remarkable administration of English affairs between the years 1880 and 1885 gave an immense impulse to general education and enlightenment, to liberalism of thought, and to charity of judgment. The profession of medicine shared, to a marked extent, in the rise of the scientific knowledge of the people and in the broadening of their views of life, for Mr. Gladstone's humanitarianism provided in England a political environment, within which sanitary legislation and the practice of preventive therapeutics could best thrive. He was a true friend to man, and used his splendid gifts, always, as he believed, under the direction of his and their Maker, for the advancement of man. Such lives must always help forward the cause of medicine, for those who live them must always be in direct sympathy with everything that is best and noblest in our art.

Cincinnati.

Dr. O. P. Holt—At a recent meeting of the faculty of the Miami Medical College, Dr. O. P. Holt was elected to the faculty, vice Dr. Joseph Eichberg resigned.

The Faculty of the Ohio Medical College has undergone some change. Prof. Samuel Nickles resigned his position of the chair of materia medica and was succeeded by Dr. B. K. Rachford; the latter's place, the chair of physiology, was taken by Dr. Poole; Dr. W. H. Crane was elected to Dr. Poole's place, the chair of chemistry. Dr. C. L. Bonifield became professor of clinical gynecology, and Dr. S. C. Ayres professor of ophthalmology and otology.

Original Research Society.—The members were compli-

mented in the person of Dr. D. I. Wolfstein of this city, whose paper on "The Neuron Theory as Related to Brain and Nervous Diseases in the Light of the most Recent Investigations" was awarded the Fisk Fund Prize of $350, given by the Rhode Island Medical Society for the best original essay. His article will be published in monograph form at the expense of the Fisk Fund.

CINCINNATI HOSPITAL.—The annual war between the daily press and the Cincinnati Hospital is now on and the former are entertaining their readers with sensational stories of mismanagement on the part of the trustees. The latter have retaliated in their usual manner by excluding reporters from the sacred precincts of the building as though that would accomplish any good result. The Board, in a praiseworthy attempt to cut down expenses, adopted the rule that all medicines should be ordered directly from the drug store and that the ward medicine chests be abolished. The rule became a dead letter as soon as issued, luckily for the Board, or their ears would soon have been assailed with the news of the death of some patient who had died waiting for the medicine that never came, a story the concoction of some enterprising newspaper man. The establishment of war prices in all kinds of hospital materials make it necessary for decided cuts in expenses to be be made somewhere, as the hospital appropriation is made on a peace basis.

PUBLIC OFFICES.—When the city started to reform its public offices last year, there was no idea that the powers that be would appoint a health officer other than one satisfactory to the medical profession. But while the latter were sitting supinely around waiting for enthusiatic delegations of politicians to beg them to accept of the position, "Dr." ——, a well known advertising medium, did a little solid hustling, and the position was his practically without opposition. Then and then only, when it was too late, did the profession rise in its wrath and declare this thing was not to be, and at the Academy of Medicine a resolution by the city bacteriologist was presented, and after being held over for one week was lost, after considerable heated debate. The resolution was as follows:

Resolved, That it is incompatible with the honor and dignity which such membership carries with it for any member of this society to accept employment under the recently appointed health officer.

As said before, the motion was lost and the following was substituted:

Resolved, That it is the sentiment of this Academy of Medicine that we protest against the appointment of the present health officer as an insult to the medical profession and a danger to the city.

This was carried amid great applause and the measure was of course slurred by the daily press as a dastardly persecution by the doctors, of an "honorable" gentleman and a good citizen. How much better if all this oratory and vituperation had been exercised to prevent Mr. Tenney from ever getting the office.

HEALTH DEPARTMENT.—Total number of deaths during the month of May, 482: Phthisis pulmonalis, 48; cancer, 23; entero-colitis, 10; gastro enteritis, 11; gastritis, 4; enteritis, 8; convulsions, 11; apoplexy, 16; bronchitis, 33; heart disease, 27; pneumonia, 44; accidental, 17; measles, 89 cases reported, 3 deaths; diphtheria, 21 cases, 2 deaths; scarlet fever, 13 cases, no death; typhoid fever, 16 cases, 8 deaths; phthisis pulmonalis, 50 cases, 48 deaths; membranous croup, 3 cases, 1 death; pertussis, 35 cases, 7 deaths; varicella, 6 cases, no deaths. Of the 89 cases of measles, 25 cases were from one ward and 10 from another; 5 of the 13 cases of scarlet fever were reported from a single ward; 4 of the 6 cases of chicken-pox were from one ward.

THE ACADEMY OF MEDECINE closed for the year June 13, with a paper by Dr. E. P. Adams, entitled "Symphyseotomy, with Report of a Case Terminating in Perfect Immobility."

CHANGE OF ADDRESS.

Brown, S., from Venetian to Reliance Bldg., Chicago, Ill.
Bartholomew, J. N., from 135 to 51 Lincoln Ave., Chicago, Ill.
Becker, B. A., from Elgin, Ill. to New Vienna, Ia.
Cox, J. E., from Big Pine to Bridgeport, Cal.
Cole, F. M., from Chicago, Ill. to Ida Grove, Ia.
Culbertsen, C., from 2404 Prairie Ave., Chicago, to Piper City, Ill.
Church, W. F., from Gibsonburg, O. to 1942 W. Polk St., Chicago, Ill.
Dickerson, J. H., from Columbus, O. to 1629 W. Lexington Av., Baltimore, Md.
Donohue, N. J., from 2319 Dearborn St. to 2441 Wabash Ave., Chicago.
Davis, E., from 396 to 1541 College Ave., Indianapolis, Ind.
Eaton, H. B., from San Juan to 704 Sutter St., San Francisco, Cal.
Evans, E. E., from Columbia to Sumner, Mo.
Gibbs, M. D., from Mendota, Mo. to Greenwood, Colo.
Gale, M. J., from Denver to Rowena, Colo.
Hall, W. A., from 1623 Hawthorn St. to 1777 S. Colfax St., Minneapolis, Minn.
Hoffman, F. N. A., from Stewardson to Teutopolis, Ill.
Harrison, R. H., from Galveston to Houston, Tex.
Holland, J. W., from Philadelphia, Pa. to Holderness, N. H.
Jones, R. F., from Homma, La. to El Paso, Tex.
Klein, M. J., from 806 E. North Ave. to 1128 Washington Boul., Chicago, Ill.
Kirkpatrick, W. L., from Jameson to Crab Tree, Tex.
Lind, E. T., from 132 to 128 Oak St., Chicago, Ill.
Mereness, H. D., from Sac City to Carnavon, Ia.
McGinnis, R. H., from Charlotte, N. C. to Jacksonville, Fla.
Mosher, F. D., from 272 Lisbon Ave. to 1280 12th St., Milwaukee, Wis.
McMass, M. E., from Chicago, Ill. to Piqua, O.
Norris, M. D., from Sykesville to 602 Windermere Ave., Baltimore, Md.
Oneil, M. E., from Kensett to 831 Howard St., San Francisco, Cal.
Palmer, T. P., from Chicago to Baker Bldg., Alton, Ill.
Parkhill, C., from McPhee Bldg. to 1131 17th Ave., Denver, Colo.
Rose, F. L., from Chicago to 237 E. 18th St., New York, N.Y.
Roan, C. F., from 691 to 740 W. North Ave., Chicago, Ill.
Ryan, C. S., from Milwaukee to Greenleaf, Wis.
Rietz, P. C., from Manitowoc, Wis. to Chicago Policlinic Hospital, Chicago.
Sterne, A. E., from 75 E. Michigan to 1820 E. 10th St., Indianapolis, Ind.
Sullivan, M. K., from Williamstown, N. J. to Sharon Hill, Pa.
Schreuder, L. S., from Chicago, Ill. to Shelly, Minn.
Slagle, C. D., from Pomona, Cal. to Centerville, O.
Tittertington, M. B., from Hardin, Ill. to Norwalk, O.
Van Deman, from Chattanooga to Albionville, Ia.
Walch, J. H., from 528 to 480 Grand Ave., Chicago, Ill.

LETTERS RECEIVED.

Armstrong, S. S., Berrien Springs, Mich.
Brown, M. A., Cincinnati, O.; Bischoff & Co., C., New York, N. Y.; Bailey, M., Sheldon, Ia.; Barryte, E. L., Colorado Springs, Colo.; Bogle, M. A., Kausas City, Mo.; Blakiston, Son & Co., P., Philadelphia, Pa.
Crane, M. M., Refugio, Tex.; Clark, E. E., Danville, Ill.; Collins, E. F., Mt. Sterling, O.
Durkee, Jno. W., New York, N. Y.
Eugert, Rosa H., (2) Muenchen, Bavaria.
Freudenthal, New York, N. Y.; Fuqua, J. W., Urbana, Ill.
Hyndman, J. G., Cincinnati, O.; Harris, Geo. T., Louisville, Ky.; Hoffman, F. N. A., Teutopolis, Ill.; Hull, H. D., Nunda, Ill.; Haulenbeck, G. H. Adv. Agency, New York, N. Y.; Hatch, W. G., Prairie City, Ill.; Hummel, A. L. Adv. Agency, New York, N. Y.
Jones, Philip Mills, San Francisco, Cal.; Just's Food Co., Syracuse, N. Y.
Kempson & Co., J. F., New York, N. Y.
Little, R. M., St. Louis, Mo.; Lee, B. R., Philadelphia, Pa.; Loving, S., Columbus, O.; Loope, T. E., Manawa, Wis.; Lea Bros & Co., Philadelphia, Pa.
Myers, F. C., Kalamazoo, Mich.; McDaniel, J. W., Milwaukee, Wis.; McNary, Mrs. W. H., Martinsville, Ill.; Murray, N., Baltimore, Md.; Melesio de Anda, Cocula, Jalisco, Mex.; Mariani & Co., New York, N. Y.; McVea, Chas., Baton Rouge, La.; Meany, W. B., Louisville, Ky.; Mulford, H. K. Company, Philadelphia, Pa.; Mellier Drug Company, St. Louis, Mo.
Opie, Thomas, Baltimore, Md.
Prince, David, New York, N. Y.; Phenique Chemical Company, St. Louis, Mo.
Quillian, D. D., Athens, Ga.
Randall, B. A., Philadelphia, Pa.; Redwine, B. B., Wise, Va.; Rumph, Wm., Mansfield, Tex.
Subscription News Co., Chicago, Ill.; Strader, G. L., Omaha, Neb.; Sapper, G. H., Washington, Mo.; Smart, Col. Chas., Washington, D. C.; Smith, Kline & French Co., Philadelphia, Pa.; Searle & Hereth Co. The, Chicago, Ill.; Scheppegrell, W., New Orleans, La.; Spencer Lens Co., Buffalo, N. Y.
Tudor, Mary S., S. Windsor, Conn.; Thomas, F. W., Marion, O.; Truax Greene & Co., Chicago, Ill.; Trommer Extract of Malt Co., The, Fremont, O.
Wilbanks, M. L., Bell, Tex.; Woman's Medical College, Baltimore, Md.; Wing, Elbert, Chicago, Ill.; Wallace, W. B., Lima, Ind.; Wyeth, Chas., Terre Haute, Ind.; West, M., Camden, N. J.; Wilmot, Castle & Co., Rochester, N. Y.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from June 11 to 17, 1898.

Acting Asst. Surgeon George B. Lee, U. S. A., will proceed to Jacksonville, Fla., and report to Major General Fitzhugh Lee, U. S. Vols., commanding Seventh Army Corps, for duty.

Acting Asst. Surgeon Medwin Leale, U. S. A., is assigned to duty with squadron of New York Cavalry Vols. at Camp Alger, Va.

Capt. John L. Phillips, Asst. Surgeon, having reported to the Surgeon-General of the Army, is ordered to Camp Alger, Falls Church, Va., for duty with Second Army Corps.

Capt. Henry T. T. Harris, Asst. Surgeon, now on duty with cavalry division, Tampa, Fla., will report for duty to Major General Fitzhugh Lee, U. S. Vols., commanding Seventh Army Corps, Jacksonville, Fla.

Capt. Henry B. Shaw, Asst. Surgeon, now on duty at the general hospital, Key West, Fla., is ordered to duty at Key West Bks., Fla.

Capt. Paul Clendenin, Asst. Surgeon, now at Key West Bks., ordered to Jacksonville, Fla., for duty with Seventh Army Corps.

Capt. Adrian S. Polhemus, Asst. Surgeon, will proceed from Ft. Wingate, N. M., to Chickamanga National Park, Ga. and report for duty with Third Army Corps.

Capt. Charles B. Ewing, Asst. Surgeon, now on duty with cavalry division, Tampa, Fla., will report to Major General James F. Wade, U. S. Vols., commanding Third Army Corps, Chickamauga National Park, for duty at Camp George H. Thomas, Ga.

Capt. Ogden Rafferty, Asst. Surgeon, order assigning him to duty in general hospital, Key West, Fla., is revoked, and he will proceed to Falls Church, Va., and report to Major General William M. Graham, U. S. Vols., for duty.

First. Lieut. Carl R. Darnall, Asst. Surgeon, will proceed to Tampa, Fla., and report to Major General William R. Shafter, U. S. Vols., commanding Fifth Army Corps, for duty.

Acting Asst. Surgeon S. M. Gonzalez, U. S. A., will proceed to Tampa, Fla., and report for duty with cavalry division.